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PREFACE

THE primary consideration in the binding of books was the preservation of records. The craftsman has never been wholly satisfied in regarding this as a matter of mere utility only, for he knows that the essence of good workmanship is design. *What is worth doing is worth doing well*, but this does not of necessity entail heavy expenditure in the way of tools and apparatus. To prove that good work can be done with little outlay is one of the reasons for writing this book.

F. R. S.

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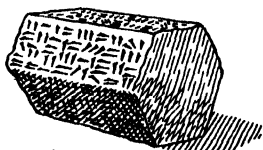
INTRODUCTORY

BOOKBINDING is, comparatively speaking, a modern art. Although there are many evidences of records made by early man, it is not until the clay tablets of the Assyrians are reached that we find any attempt to preserve records and make them permanent. In these the clay was inscribed upon while in the soft state, and afterwards baked to render them more lasting. At first oblong in shape, these tablets eventually became cylindrical and six-, eight-, and ten-sided. One of the most famous is a seventh century B.C. cylinder, on which is described the finding of another cylinder which had lain buried for 3,200 years. Protective coverings were sometimes used for the tablets, forming a prototype of the book cover. Later, the Romans made use of wax on which to inscribe their records. Hollowed boards were filled with black wax, the inscription being made, as before, with a stylus. The development at this stage is the lacing together of the boards on one edge with thongs of leather.

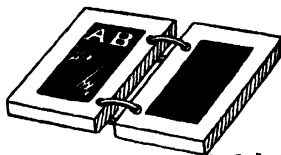
From the use of soft materials on which to make impressions we come to one of the greatest steps taken in the history of record making, i.e. the discovery in Egypt of a substance made from papyrus grass which could be written upon with a reed pen. At first, papyrus writings were in roll form, the writing being either (*a*) in short lines across the rolls, (*b*) in long lines, the length of the roll, (*c*) or in columns across the roll. At each end of a length of papyrus wooden rollers were often attached. These made the handling of the rolls much easier.

When rolled, the *volumen*, as it was called, was enclosed in a wooden case. The earliest record of the use of papyrus is in the year 4,000 B.C. During the reign of Ptolemy, King of Alexandria, the export of papyrus from Egypt was stopped, resulting in the discovery, by the people of Pergamentum, of the material known as parchment. Prepared from the suitably treated skin of the goat, parchment has outlived the use of papyrus, being still in use to-day.

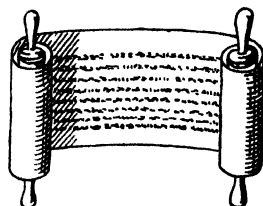
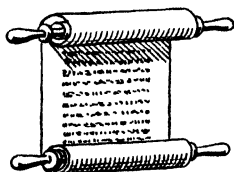
The discovery of the use of papyrus was the birth of the craft of Bookbinding. When the writings were made in columns or panels parallel to the long edges of the roll, it was found more convenient to fold the papyrus along the blank spaces between the writings and so forming leaves. These were sewn together along the back edges and eventually attached to cords, forming a book, the front edges of which were double, still instanced in the books of Japan. Later came the separated leaf with the possibility of writing on both sides instead of only one. From this stage to the book in its present form was but a natural development. One of the first cares in the new condition of things was the protection of the leaves from wear and tear. At first wooden boards were attached to the cords securing the leaves in such a way as to form an upper and an under covering. These had the disadvantage of making the book very heavy. Eventually a lighter material was produced by pasting sheets of paper or parchment together. This formed a substance that was not liable to crack or warp. It was not long before the new "boards" received an outer covering of material which extended over their surfaces and passed round the back of the book, leather being the first material used. The



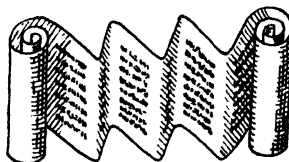
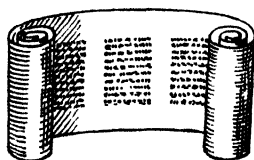
Assyrian clay tablet.



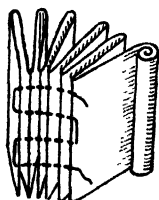
Roman wax tablet.



The Roll.



The folded leaf.



Stitching.



The separated leaf.

surfaces formed by the leather covering lent themselves readily to decoration, with the result that patterns were stamped or tooled on them. At first only "blind tooling" was used, but towards the end of the fifteenth century gold was introduced. This brought about an alteration in the construction of the back of the book. Up to this period all books were bound with what is known as "tight" backs, the covering being glued to the sewn backs of the sections. This formed a very flexible type of book, as it allowed the pages to lie flat when open. The opening of the book, however, creased the back to such an extent that the gold tooling on it was destroyed. This led to the invention of the "hollow back" which allowed the book to remain open but did not damage the decoration of the back in the opening. Besides leather, various materials have been used in the covering of books, among them being ivory, gold plate, pierced silver and embroidery.

Hand-made paper was introduced in the tenth century. Being of standard size, the terms applied to the folding gave the names to the various book sizes, such as "folio" "quarto," etc.

BOOKBINDING

CHAPTER I

TOOLS AND APPARATUS

THE equipment necessary for bookbinding is not extensive. Many of the tools can be found at home, and others made at very little expense. Much of the apparatus, too, can be made; it is only when the finishing tools are reached that any great outlay need occur.

It is unnecessary for a beginner to obtain at first all the tools enumerated below. It is much better to start with those which are absolutely essential and add to them as the work advances and necessity arises.

HAMMER. A shoemaker's hammer is best as it has a slightly domed head (Fig. 6, Plate 3). One with a flat head would be unsuitable as the sharp edges cut the paper.

KNIFE. As this will probably be used for paring leather it is essential that it should be flexible. The best knives for the purpose have no fixed handle, a strip of leather being wrapped round the steel to form a grip. A shoemaker's old knife, if still long enough to be flexible, will answer the purpose very well (Fig. 4, Plate 3).

PINCERS. There are special wide-nosed pincers to be obtained, but any that are not too narrow can be used. (Fig. 1).

WING COMPASSES. A pair of large dividers will be

quite suitable and are better for having an adjustable quadrant (Fig. 3).

BODKIN. The work-basket should produce this tool, or one similar to Fig. 8 can be purchased.

KNOCKING-DOWN IRON. This is a perfectly smooth plate of iron capable of taking the length of an ordinary book. For it may be substituted a piece of hard wood, such as oak (Fig. 9).

BONE FOLDER. The bone variety is best, being easily cleaned; but a paper knife or perfectly smooth piece of wood can be used.

NEEDLES. The ordinary darning needle answers the purpose.

BRUSHES. Tin ferruled or string-bound brushes should be used for paste and glue in preference to those bound with wire or iron, these latter being liable to rust and cause stain.

TRY SQUARE. A small try square will be required. Pear wood set squares can be used, but are not so handy for the purpose.

STRAIGHT EDGE. The ordinary steel foot rule answers this purpose admirably.

TENON SAW. A small tenon saw will be necessary for sawing in. It should be sharp and well set.

For finishing, other tools will be required—

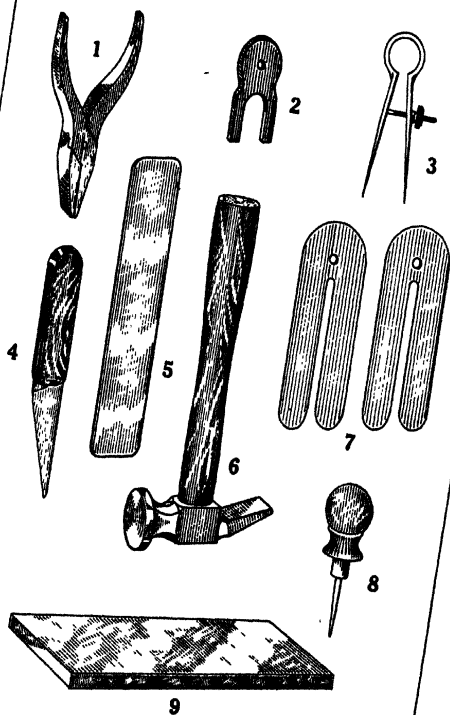
BURNISHER. Where gilt edges are being dealt with an agate burnisher will be necessary, such as is shown in Fig. 1, Plate 4.

CUTTING BOARD. This is for cutting the gold leaf upon and can be made as shown in Fig. 2.

KNIFE. A sharp knife similar to that illustrated in Fig. 3, is used for cutting the gold leaf.

PALLET. This tool is used for forming lines in

TOOLS.



2-(D.1298)

PLATE 3. TOOLS (FORWARDING)

blind- and gold-tooling (Fig. 4). It can be obtained in single or double lines of various widths.

LETTERS. Where lettering is to be done a set of letters and figures will be required. These should be cut in brass, which retains the heat better, and is not so liable to burn the leather as steel.

ORNAMENTAL TOOLS. These should be obtained as necessity arises. These, too, are cut in brass (Fig. 5).

ORNAMENTAL PUNCHES. As these are to be used cold they may be of steel. They can be obtained in great variety from any manufacturer of leather tools (Fig. 6).

Among the apparatus one of the first things required will be the—

LYING PRESS. This may be purchased or made as shown in Fig. 1, Plate 5.

The jaws of the press can be made from oak, beech, or birch. The bolts, which should be about 12 in. long, can be fitted as at *A*, Fig. 1, Plate 5, or as at *B*, in the same figure. In *A* a nut is inserted in the back jaw for the bolt to work through (*C*) and operate the jaw. The front jaw is made fast to the bolt with a counter-sunk washer and split pin as at *D*, the bolt being drilled for the insertion of the latter. The hexagon head of the bolt *E* can be turned by a handle spanner, similar to those used for spring mattresses. In *B* the head of the bolt is counter-sunk in the back jaw *F* and made fast by a counter-sunk washer and split pin *G*. The press is closed by means of the wing nut *H*. The slides *K*, in both instances, are either iron or brass rods made firm in the front jaw, and sliding free in the back.

THE PLOUGH. This can be made in wood, similar to that of the press. Two pieces are cut as at *A*, Fig. 2, Plate 5. A wood screw and nuts can be obtained by

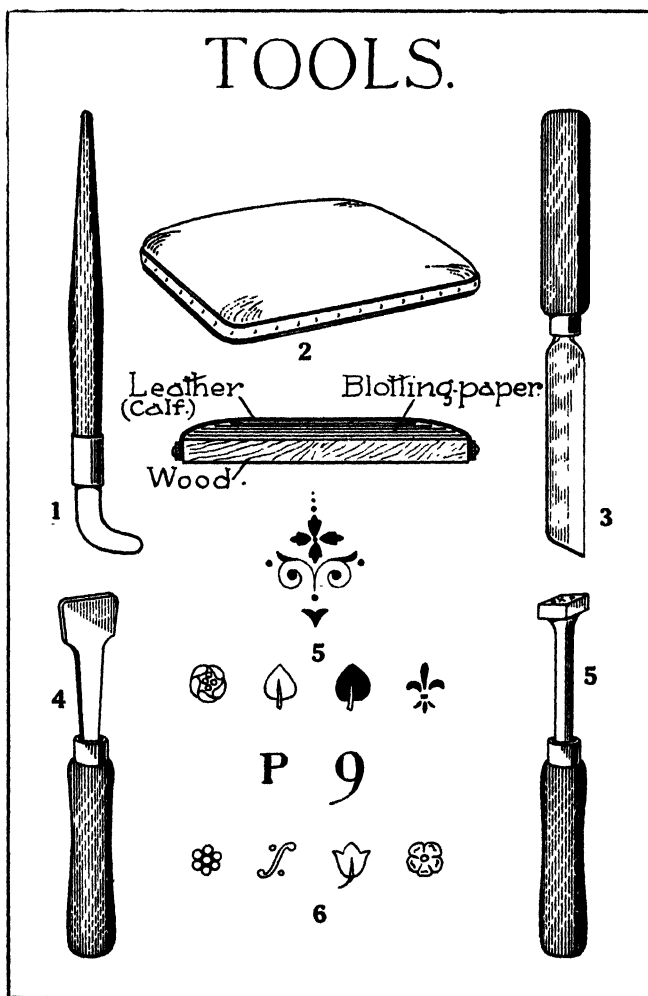


PLATE 4. TOOLS (FINISHING)

cutting a joiner's hand screw, as shown in Fig. 3. The wooden nuts obtained are inserted in the two jaws as at *B*, and made firm. The sliding rods are similar to those in the press *C*. A knife blade is drilled and counter-sunk into the front piece of the plough, and made firm with counter-sunk screws *D*.

THE STANDING PRESS. This can be made as in Fig. 3, Plate 6, the screw used, and the nut, being obtained from the remaining portion of the joiner's hand screw. If available, the ordinary office press (Fig. 4) forms a good substitute. An auxiliary press can be made from two pieces of stout wood with bolts and wing nuts placed at the corners (Fig. 5).

SEWING FRAME. The standard sewing frame is illustrated in Fig. 1, Plate 6. A good substitute can be made by nailing two uprights and a cross bar to an inverted box (Fig. 2). The key for use with the standard frame is illustrated in Fig. 2, Plate 3, and can be easily cut from a piece of plywood.

TRINDLES. These are cut from metal to the shape shown in Fig. 7, Plate 3.

PRESSING PLATES. Sheets of perfectly flat tin or zinc answer this purpose. They should be larger in size than the book.

PRESSING BOARDS. These are flat pieces of board, also larger than the book.

BACKING BOARDS. These are of the shape illustrated in Plate 15, and are used when backing the book.

GLUE POT. The substitute for this has been described elsewhere.

FINISHER'S STOVE. This is shown in the chapter on "Finishing."

APPARATUS.

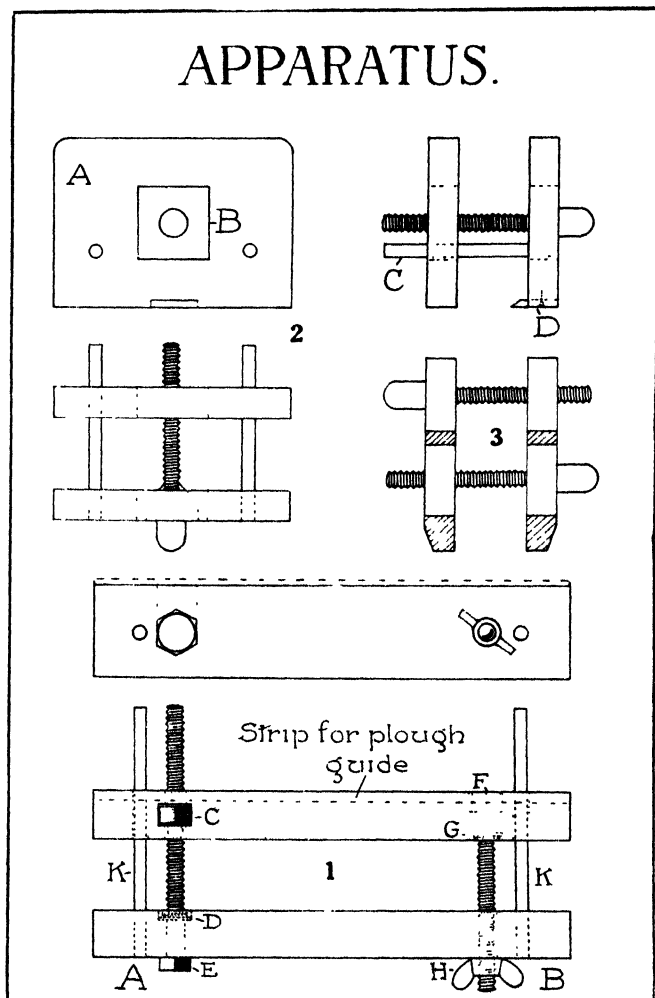


PLATE 5

CHAPTER II

MATERIALS

THERE is a wide range of choice in the materials used in Bookbinding. The following list will help the beginner in the selection—

BOARDS—

Millboard. A very tough and pliable board, well suited for bookbinding. The sheets vary in size and thickness, and are somewhat difficult to cut.

Leatherboard. This is also a very tough and reliable board. Larger sheets can be obtained than in millboard.

Strawboard. Obtainable in large sheets, this board, although cheaper than either millboard or leatherboard, it is not much used in bookbinding, owing to its liability to bruise at the corners and crack.

Pulp Board. Although cheaper than strawboard it is not so strong, and, if used, should always be strengthened with stout lining paper. It is very liable to crack.

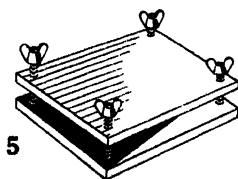
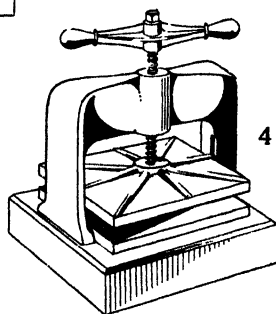
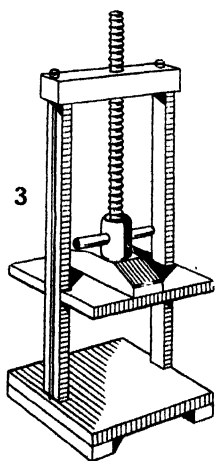
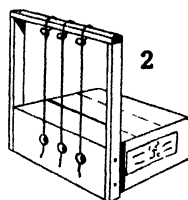
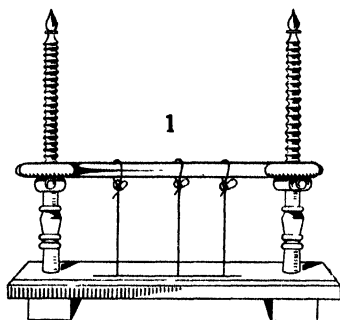
White Cardboard. Rarely used in bookbinding, this can be rendered stronger by pasting the sheets together, but even then is liable to bruise at the corners.

COVERINGS—

Vellum. The strongest and most durable of the coverings, and is only used for special bindings. Obtainable in sheets or skins, and rather expensive.

Roan. As a much cheaper leather it is next in strength and durability to vellum. It is obtainable in skins of many colours and textures, and is suitable for half bindings where strength is required.

APPARATUS.



Levant Morocco. For certain classes of books, such as Bibles, Prayer Books, books of poems, etc., this is one of the best leathers. Of a variety of colours and textures, it is to be purchased in whole, half, or quarter skins, in two qualities, selected and ordinary.

Persian Calf. The best leather for general purposes. Smooth in grain, it is obtainable in a variety of colours.

Calf. This leather is used for work of the best kind. It is somewhat thick, and is either stained or left its natural colour. Law calf, which is much thinner, can be used for small books. Both have a smooth grain and are expensive.

Skiver. One of the thinnest and cheapest of leathers, this is not adapted for hard wear and should only be used on small books. It is obtainable in large skins and in a variety of colours.

Bookbinding Cloth. If service is required it is better to avoid the cheaper varieties. Cloth can be purchased by the yard. Obtainable in a number of colours, it is about 1 yard in width.

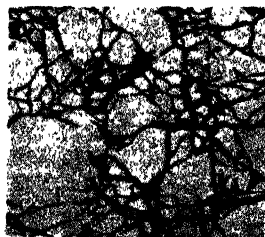
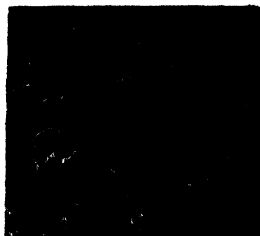
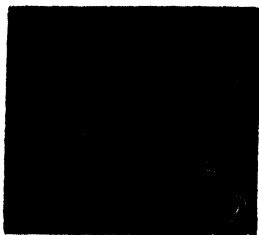
Duxeen. This is an imitation cloth. Although not so strong as cloth, it has the advantage of being cheap and fairly serviceable. It is made in about six colours and is of the same width as cloth.

Art Canvas. A very strong material and slightly thicker than cloth. Obtainable in about six colours, and used for best work.

Linen. Bookbinders' linen is the best for general purposes, being very serviceable and strong. It is to be had in a number of colours and is not expensive.

Plain-coloured Cover Papers. There is a large variety of these to select from. Made in various textures and thicknesses they are very serviceable for

PRINTED ENDPAPERS.



ordinary wear, and are pleasing in colour. The thinner varieties can be used for end papers.

End Papers. These are obtainable in sheets either "marbled" or in a variety of patterns in colour and gold.

Cartridge Paper. Useful for "filling in" and end papers. Obtainable in sheets from whole to quarter imperial size.

TAPES. Bookbinders' tape should be obtained, as the ordinary kind is too soft for the purpose.

CORD. A good hempen thread is necessary, and is obtainable in balls.

THREAD. Bookbinders' linen thread should be used for sewing. It is made up in skeins.

HEAD BANDS. These are always worked on the best bindings as they strengthen the head and tail of the book. For cheaper bindings they can be bought in lengths made in either linen or silk. These head bands are glued on.

GOLD LEAF. Obtainable in small books, 3 in. \times 3 in. and containing twenty-four leaves. There are nine tones: light, medium, and deep yellow, red or green. The gold is either mounted on paper or loose, the latter being preferable for best work.

GLAIRE. This is made from the white of eggs. To prepare glaire for edge gilding, the white of one egg is placed in a cup full of water, and beaten well into a froth. After being allowed to stand for a time the glaire is poured off into a bottle and corked, the froth being allowed to remain. In finishers' glaire the white of one egg is thoroughly beaten up with a dessert-spoonful of *pure* vinegar, and allowed to stand for a time. It is then poured off and bottled as described before.

PASTE. There are many good pastes on the market. Care must be taken that one is used that is not likely to decompose or mould. A good paste is made by taking $\frac{1}{2}$ lb. of best white flour and $\frac{1}{4}$ oz. of powdered alum, and thoroughly mixing them together. Gradually add cold water and stir with a wooden spoon until the mixture attains the consistency of thick cream, great care being taken that no lumps remain. A pint of water is put into a saucepan and brought up to nearly boiling point. The mixture is gradually poured in and well stirred the whole of the time. When thoroughly mixed it is brought up to boiling point, then allowed to simmer for a quarter of an hour, with an occasional stir. When it has thickened it is poured off and allowed to cool. A skin will form when cooling; this should be removed, the paste well beaten up, and then placed in a jar or enamelled bowl. If a piece of galvanized wire is stretched across either of these receptacles it will be found useful on which to scrape the brush. The brush used should have a non-rusting ferrule. A few drops of oil of cloves added to the paste will preserve the books from the attacks of insects. For mending leaves where very white paste is required starch or rice flour is used.

GLUE. Only the best Scotch glue should be used. If a glue pot is not available an ordinary jam jar will answer the purpose. The broken-up glue is placed in this and covered with water, the jar being then placed in a saucepan of water. The jar should be well cleaned before fresh glue is made. The glue and water should be allowed to stand for an hour or so before it is placed on the fire to boil. During this process it should be frequently stirred, a stick being best for this purpose.

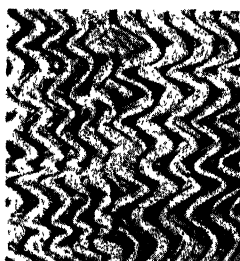
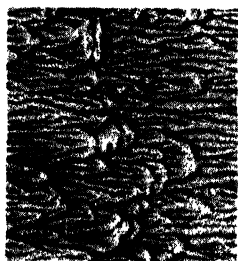
Continual re-heating gradually decreases its adhesive properties; if allowed to burn it is valueless. Where a lighter colour is required, sheet gelatine or pale French glue is added in equal proportions. There are many liquid glues on the market which are very convenient for use.

Leather is more adaptable to the binding and covering of books than any other material. The qualities of softness, pliability, tenacity of adhesion, strength, and its variety of thickness make it ideal under the exceedingly varied conditions of binding. For those who wish to carry the art of binding to a further extent than has been intimated in the foregoing list of materials, the following leathers have been added.

In the process of tanning and dyeing, a certain amount of acid is left in the leather. This is adverse to the desired long life of a special binding. Where durability and length of service is required there is no better than the sun-tanned Niger leather. Cured by the Nigerian native, temperature and time have been allowed to operate, with the result of an acid-free leather capable of withstanding severe tests of heat, dryness, and moisture. For strength and durability it can be placed next to vellum. The Nigerian "sheep" is stronger than the "goat," while the "soft" variety comes next in order of merit. Pigskin comes next on the list for durability, followed by hard-grained Persian goat and morocco. Cowhide and calf, although eminently suitable to tooling, have not the wearing qualities of the above. The same may be said of Law sheep.

It must be remembered that a lot depends on the thickness of the leather. The "grain" is the side of the skin on which the hair once grew, the "pile" the

HOME-MADE ENDPAPERS.



muscular tissue which came next to the animal's body, and therefore much stronger than the "grain." As most leathers are pared on the "pile" side, it will be seen that in doing this much of the strength of the skin is lost. What was strong when unpared becomes much weaker when pared.

CHAPTER III

FORWARDING-- BROADSHEETS--FOLDING--STRIPPING AND CLEANING OLD BOOKS--REPAIRING--TERMS APPLIED TO VARIOUS PARTS OF A BOOK-- KNOCKING-UP--PRESSING--MENDING-- CLEANING-- GREASE MARKS--SIZING

THE various stages through which a book passes, from stitching the sections together to getting into covers, is known as "forwarding."

When a book leaves the hand of the printer it is in the form of sheets, known as "broad-sheets." On these the text and the illustrations are arranged, having blank spaces between the masses to form the margins (Fig. 1, Plate 9).

The sheets of paper used in printing are of various sizes, the technical terms for which are based on their measurement in inches. The principal sizes are as follows—

Double royal	40 in. × 25 in.
Double demy	35½ in. × 22½ in.
Double large post	33 in. × 21 in.
Double crown	30 in. × 20 in.
Double foolscap	27 in. × 17 in.
Imperial	30 in. × 22 in.
Super royal	27½ in. × 20 in.
Royal	25 in. × 20 in.
Medium	24 in. × 19 in.
Demy	22½ in. × 17½ in.
Large post	21 in. × 16½ in.
Crown	20 in. × 15 in.
Post	19 in. × 15½ in.
Foolscap	17 in. × 13½ in.

The first stage in the process of binding is the folding of the broad-sheets. This is done in such a manner

that when the edges of the folded sheets are cut it will form one *section* of a book. Books not only vary in size according to the paper used, but also in the number of times the sheet is folded. This is arranged for when the sheet is being printed.

The technical terms used to describe the number of leaves into which the sheet has been folded are—

FOLIO, where the sheet has been folded once, making two leaves to a section.

QUARTO, where the sheet has been folded twice, making four leaves to a section.

OCTAVO, where the sheet has been folded three times, making eight leaves to a section.

SEXTO DECIMO, where the sheet is folded four times, making sixteen leaves to a section.

The last three terms are usually contracted to quarto = 4to, octavo = 8vo, and sexto decimo = 16mo.

If a sheet of demy paper is taken as an example and folded once, the result is termed demy folio, producing two leaves or four pages, measuring approximately 17 in. \times 11 in. When the sheet is folded twice it produces demy quarto with a section of four leaves or eight pages, approximately 11 in. \times 8½ in.

FOLDING. This requires a great deal of care in order that the printed matter on each page shall register; in other words, the edges of the printed matter must stand vertically over each other when the book is *collated* and resting on the table. To fold, the broadsheet is placed upon a board or table, and folded *towards* the worker. The upper part of the sheet is pulled over, and the joint is creased or flattened by means of a bone folder. This will then be a folio. If it is necessary to produce quarto, the sheet is folded over

PREPARATION.

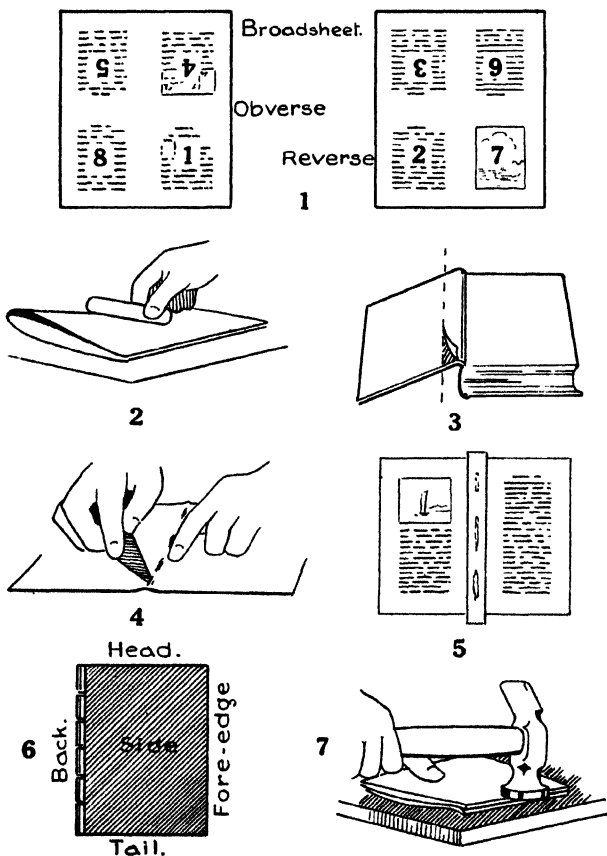


PLATE 9

again from right to left, or vice versa. It is always advisable to hold the sheet up to the light to make sure that the printed matter registers before finally creasing. The sheet, when folded twice or more, becomes a *section*, but if in folio it is usual to place a number of sheets one within the other after folding, to form the *section* (Fig. 2, Plate 9).

It is, perhaps, better that the first attempt at binding should be made with a book that requires rebinding, or with a book that has been issued in parts. The latter are usually published unsewn, being held together by wire staples. The book should not be a large one; crown 8vo, about 1 in. in thickness, will answer the purpose admirably.

To begin, the outer covers are carefully stripped off and all advertisement pages removed. In rebinding it will be necessary to cut and pull out the old sewing thread. Great care must be taken in doing this not to damage the leaves or cut the sections. The old glue remaining on the back of the sections must be picked off with the fingers or scraped away with a knife. The former method is to be preferred, the possibilities of damaging the section being less (Figs. 3 and 4, Plate 9).

In the binding of periodicals the staples are first removed. To do this the ends of the wire are found and levered up by means of a small screw-driver. Protection can be given to the paper by the insertion of a small piece of metal under the end of the tool. When both ends of the wire are opened the book is turned over, and the middle of the staple levered up for a short distance in a similar manner. The staple can now be easily extracted by means of a pair of pliers. All glue must be removed from the back of the

sections as before. Where the outer leaves of a section have been damaged at the back they can be repaired by pasting a narrow strip of bank note paper, about $\frac{1}{4}$ in. wide, over the fold. The leaves should be flattened out with the back of the crease uppermost, and care taken that the pasted slip is placed centrally over the damaged fold. The slips should be a little longer than necessary to be trimmed off to the size of the leaves when dry (Fig. 5, Plate 9).

The technical terms used to denote the parts of a book are—

BACK. Where the folds occur in the sections, or the part of the book that is stitched together.

HEAD. The top of the pages or sections.

TAIL. The bottom of the pages or sections.

FORE-EDGE. The open edge of the sections parallel to the back.

SIDES. The parts where the boards and covers are placed, the front being called the obverse, and the under the reverse side. (Fig. 6, Plate 9).

After repairing, the sections are ready for *hammering*. This is done to remove the old groove and to ensure that the sections shall lie close together for sewing.

HAMMERING, or “beating,” is performed in the following manner. The knocking-down iron is placed in a firm position on a bench or table, and a sheet of paper placed upon it to keep the sections clean. A few of the sections are taken, and held loosely between the thumb and finger of each hand, they are allowed to drop by their own weight on the knocking-down iron. This is done alternately at the *head* and the *back* until all the edges in both are quite level. This is termed “knocking up.” Held firmly in this position, the

sections are then laid flat upon the iron, a sheet of paper placed on top, and the whole beaten along the back edge with the backing hammer. Great care must be taken to ensure that the head of the hammer descends perfectly flat, otherwise the paper will be bruised and cut. It is a good plan to allow the hammer to rest a short time on the sections before raising it for the next blow, as this will obviate, to a great extent, the use of a pounding blow. All the sections are treated in this manner (Fig. 7, Plate 9).

New books should be beaten very carefully, or they will probably "set off"; that is to say, the fresh printing will be partly impressed on the opposite pages, rendering them illegible and unsightly. If the broad-sheets have been folded by the worker, hammering can be dispensed with, as the sections will only need *pressing* to make them lie closely together.

PRESSING. A plate of tin or zinc is laid on one of the pressing boards and a sheet of clean paper placed over it; a few sections are placed on this and covered by a sheet of paper, a tin, and another sheet of paper, more sections being added in the same manner until the whole of the book is dealt with. A second pressing board is placed on top, and the whole placed in the press and screwed down tightly. The plates of zinc and the pressing boards should always be larger than the sections being pressed. The layers of sections should be placed exactly over each other, and all plates or engravings protected with sheets of *tracing paper*. It is sometimes advisable to remove all plates from the book before pressing, and fix them in afterwards by the use of *guards*. Special protection should be given to folded maps and other illustrations of a similar

nature by placing a zinc plate on either side of them. Here, again, the new book is liable to "set off." This can be obviated by dusting the pages with a little powdered French chalk. The pressing in this case can be omitted if the sections are kept together as close as possible when sewing.

The binder should examine the pile of sections as the "screwing down" goes on, in order to prevent bulging at either the back or sides.

The sections should be left in the press all night, or, at least, for some considerable time.

MENDING TORN LEAVES. After smoothing out all irregularities the two parts are brought together as accurately as possible while lying on a clean sheet of paper. The edges are lifted, paste is carefully applied with the finger, then they are placed accurately together again. On each side is now placed a strip of Japanese tissue-paper, just long enough and wide enough to cover the tear, and the leaf then put under a weight until dry. The tissue paper is just placed in position, not pasted down or rubbed. When thoroughly dry the tissue-paper is torn off, and it will be found that sufficient remains to hold the torn edges together.

WASHING AND CLEANING. Clean stale bread is the best medium for cleaning dirty leaves. First applied with a rotary motion the crumbs are afterwards rubbed over the surface with the open palm of the hand. A piece of *very soft* rubber can be used for refractory marks. To remove stains the leaf should be placed in a shallow dish, and warm water, to which a little powdered alum has been added, poured over it. The stains are then carefully rubbed with a camel-hair brush. The leaf is rinsed in clean water and hung up to dry.

GREASE MARKS. To remove grease marks a little white soap should be rubbed over the spot, allowed to remain for half an hour, and then washed off. If this is not effective, benzine should be used. Blotting-paper is afterwards placed on each side of the leaf, and a warm iron gently rubbed over it. Leaves should always be well rinsed after a liquid cleaner has been applied. In order to produce a good surface again after rinsing, the leaves will have to be re-sized.

SIZING. The size is prepared from isinglass, gelatine, or boiled vellum chips. The two former are dissolved in hot water, the preparation being 1 ounce to 1 pint of water. They are kept in fluid by re-heating. The leaves are dipped into the liquid in a shallow dish for a few seconds, then taken out, and placed between clean sheets of white blotting-paper. They are next given a nip in the press, separated from the blotting-paper as quickly as possible, and hung up to dry.

CHAPTER IV

COLLATING—SIGNATURES—GUARDS—END PAPERS—TRIMMING

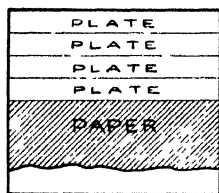
COLLATING. On the bottom margin of the first page of each section, letters or numerals, or a combination of both, will be found. Capitals are usually employed—such as A, B, C, D—and they are placed there for the double purpose of assisting the binder in folding the broad sheets, and eventually in arranging the sections in their proper sequence. The letters J, V, W, are omitted, and where the alphabet is exceeded the letters are doubled, as AA, BB, and so on. Should the work be in more than one volume the number of the volume is also added. These letters, or signs, are known as *section signatures*. In collating, the volume should be held in the left hand by the angle of the back and head, the tail of the book being upwards. The tail of the book is held by the right hand and the sections allowed to escape from the right thumb, one by one, while the signatures are attended to as each section falls over, care being taken that they follow in proper order.

All loose illustrations and maps will require guarding. *Guards* are usually made from either bank note-paper or fine white linen. For illustrations printed on the usual thickness of paper, single guards will be found sufficient. The material used for them should be cut into strips, varying in width from $\frac{1}{2}$ in. to 1 in., according to the size of the book. The strips should always be a little longer than is really necessary. In mounting, the illustrations are placed face downwards on a

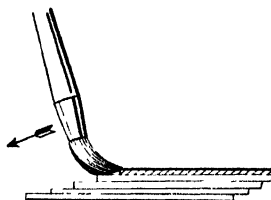
sheet of clean paper and are fanned out to form steps, the distance between the edges being equal to one-half the width of the guard. A sheet of clean paper is placed over the top illustration to form another step, and the whole are ready for pasting (Fig. 1, Plate 10). This is done by taking the paste brush *downwards* from the top paper to the bottom. Taken in any other way, the paste invariably gets under the plates thereby causing damage. It is advisable to use fairly thick paste (Fig. 2, Plate 10). Next, fan the plates out still more, and, commencing at the bottom, place the guards in position. They should just cover the pasted portion, and be well rubbed down with the bone folder. This process leaves one-half the guard pasted to the edge of the illustration, and the other half projecting over. After the guards are fixed, place the whole under pressure and allow to dry. This can be done by the use of one of the zinc plates and a weight. When perfectly dry the projecting portions of the guards are pasted, folded over on to the particular part of the section they are to occupy, rubbed well down, and again placed under pressure (Fig. 1, Plate 11).

DOUBLE GUARDS. These are made of linen and are used for illustrations printed on extra thick paper. In preparing the guards, provision has to be made for a joint for sewing, and for a hinge to allow the plate to open freely. The latter is provided for either by cutting off a portion of the back edge of the plate or by using strips of paper of similar thickness. The width of these strips in each case varies with the size of the book, and can be from $\frac{1}{4}$ in. to $\frac{3}{4}$ in. When the back edges of the plates or strips have been cut, a pair of plates are arranged side by side with the cut-off or

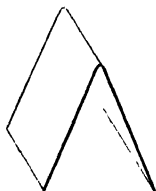
END-PAPERS.



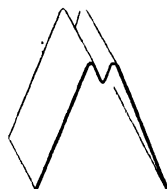
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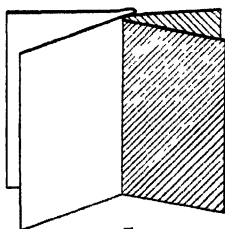
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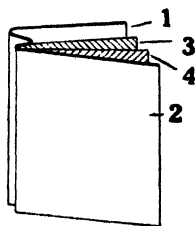
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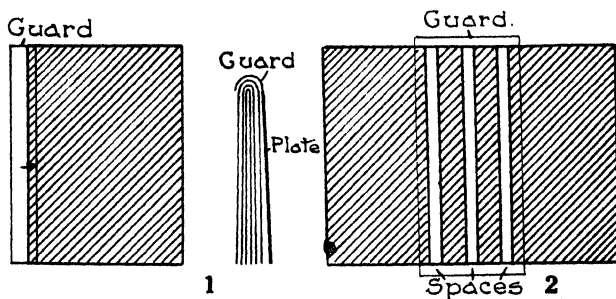
PLATE 10. PASTING

provided strips between them. The spaces between the strips, and the strips and the plates, should be equal, at about $\frac{1}{16}$ in. to $\frac{1}{8}$ in. apart, according to the thickness of the plates. When the correct positions have been obtained, the measurements of the widths of the guards are taken. They should extend from a line $\frac{1}{2}$ in. inwards on one plate to a similar line on the other, thus covering the strips between. Two guards will be required for each pair of plates.

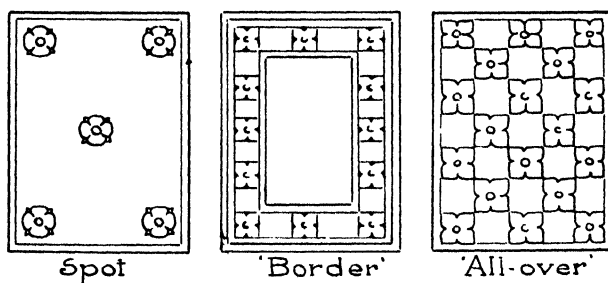
In pasting the plates turn them face downwards, and place a clean sheet of paper on each in such a manner as to leave the portion to be pasted free. Draw the paste brush from the paper to the edge of the plate as before. Place the guard over one pasted edge and rub down. In placing the guard over the edge of the second plate, great care must be taken to see that the correct distance is obtained between the two plates. The plates are next turned over, the strips pasted, and placed in their correct positions between the plates. Any deviation will cause the plates to open badly. After being allowed to dry a little, the whole is turned over and pasted ready for the second guard. Care must be taken to place this perpendicularly over the first guard. Rub well down, and while the linen is still damp rub the edge of the bone folder up and down the joints until the linen guards adhere to each other, to form the joints for hinging and sewing. In placing a number under pressure to set, each pair of plates should be protected by clean sheets of paper (Fig. 2, Plate 11).

Plates printed the long way of the paper must always be so fixed that the *title* is on the *right*-hand side of the page, never otherwise.

GUARDS.



ENDPAPER DESIGN.



Sometimes, it is necessary to "throw out" a map or diagram; the term "throw out" meaning that the plate will extend beyond the fore-edge of the book when unfolded. In this case a full page guard is used, which extends over the whole of the plate, and for sufficient distance beyond to enable it to be either sewn or pasted into the book. Linen is the material used. Sufficient strips of paper must always be inserted into the book when sewing to make up for the folds in the plates; unless this is done the book will not close properly.

The next process is the preparation of the end papers. These are the white and coloured leaves to be found at the beginning and end of a book, one of which is pasted down on the inside of each cover. The papers used for this purpose can be obtained in great variety, plain or self-coloured, marbled or patterned. For the more elaborate bindings, vellum and silk are often used.

There are several ways in which the end papers can be made up. The two given will probably be found most useful to the beginner.

Four sheets of paper are required a little larger than the sections of the book, two of which are white or cream, two coloured, marbled or patterned. All four sheets are first folded centrally (Fig. 3, Plate 10). Next take one of the plain folded sheets and lay it flat on the table. Place a ruler or straight edge on the sheet so that one edge is about $\frac{3}{16}$ in. away from the fold and parallel to it. Work the end of a bone folder up and down the edge of the ruler to form a new crease for folding. Turning the folded paper over, treat the other side the same way, taking great care that

this crease shall be vertically over the first. Still keeping the ruler in position, lift the top leaf into a vertical position and rub up squarely with the bone folder against the edge of the ruler. This enables the leaf to be folded over evenly. Turn the folded sheet over and repeat the operation on the other side. The sheet is then folded to the shape shown in Fig. 4, Plate 10. Both plain sheets are folded in this way—not the coloured. To attach the coloured sheets, take out the last folds so that the paper is folded centrally as at first, and with the finger or brush apply paste on one side from the fold to the crease. The folded coloured paper is placed on the pasted portion with its fold to the crease in the plain paper and rubbed down (Fig. 5, Plate 10). The papers are then placed to dry under a light weight. When dry, the proper position of the papers is obtained by folding the plain papers back along the original creases as in Fig. 6. It should always be remembered that after the central folding it is only the plain that are creased and pasted, not the coloured. The diagram in Fig. 6, Plate 10, shows the papers in their proper order, reference being made to them in future by the numbers given to them.

The second method of preparing end papers consists in folding both plain and coloured papers centrally as before. When folded, one of the coloured papers is laid flat upon the table and the top surface pasted all over. A sheet of plain is then taken and placed over the coloured in such a manner that the folds coincide, and rubbed well down. Further end papers are treated in the same way.

In pasting large surfaces it is always advisable to commence with the brush in the centre of the material

and work in all directions towards the outer edge. If this rule is followed it will be found that no paste will ever get under the edges, and damage the under side of the material. Plenty of old newspapers are necessary, clean sheets being used for every operation. A sheet that has once been pasted on should not be used a second time. It is always handy to have a cord stretched across the workroom in a convenient place, to hang papers, etc., on for the purpose of drying.

While the end papers are drying, books, which are not to be cut with the plough, but to remain "uncut," are subjected to the process of "trimming" to reduce the edges of the leaves to something like order.

TRIMMING. The fore-edge and tail are usually the only edges trimmed in an uncut book, the head being cut with the plough, and afterwards coloured or gilded. The reason for this is that the head of the book collects dust while standing on the shelf, and would eventually become soiled if left in an "uncut" state. In trimming, only the extreme ragged edges are dealt with. The sections are knocked up, one at a time, and the requisite width from back to fore-edge of one of them is taken by means of the compasses. This is marked at the head and tail of the first section. This section is placed on the cutting board into which two drawing pins are placed so that the back of the section rests against them. With the aid of a ruler, the marks on the section are continued on the board from head to tail. In cutting, a very sharp knife will be required, which should not be held too upright when cutting along the steel straight edge. The fore-edge is trimmed first. To ensure that the tail shall be at right angles to both fore-edge and back, place one edge of a 45°

set square along the back, and mark. Better still, place the steel of a try square along the back edge and cut along the blade. The pins and lines on the cutting board serve as a guide for the cutting of the rest of the sections. The end papers are trimmed after the book is sewn, by inserting the straight edge between them and the sections, and cutting them away level with the leaves. The head, of course, is left for the plough.

THE MAKING OF END PAPERS. There are times when the binder may wish to design and make his own end papers. There are many ways of preparing them, at very little cost, and they certainly add an interest where they have been carried out effectively and well. For the beginner, stencilling is, perhaps, the easiest method. Small units, such as are illustrated in Fig. 5, Plate 4, are designed and cut out in white cartridge paper to form the stencil plate. This plate is treated with "knotting" to render it impervious to water, etc. White or plain tinted paper may be used in the end papers, and tube water-colours, mixed with a little stiff paste, form the colour medium. The stencil plate is placed on the end paper and the colour applied by means of a stiff brush. Patterns, such as the "border," the "panel," or the "all over," can be formed with the unit, which may be in monochrome or a combination of harmonious colours to suit the cover of the book.

Another method of decorating the end papers is by the use of the "lino block." Here the unit is drawn on a small piece of lino and the background cut away, thereby leaving the pattern raised. The cutting can be done with a small gouge or a penknife. For convenience in use the lino is glued to the end of a piece

of wood, thus forming a handle (Fig. 4, Plate 14). Water-colour and paste form the medium for printing. A thick mixture is carefully brushed on to the cut-out unit and any excess taken off with blotting-paper. The unit is then imprinted on the end paper, which has previously been slightly damped.

Where the capabilities of the binder allow, designs can be drawn directly on to the end papers. Indian inks or water-colours are used, and there is great scope in the choice of subject. Conventional ornament forms the most appropriate *motif*, but landscape or figure compositions, if used with discretion, form in many cases an effective and suitable end paper. They should never, under any consideration, be allowed to cross the joint, but should form panels on the separate leaves.

A large variety of very pleasing end papers may be obtained by one or the other of the following methods. If spots of water-colour, or water stain, are dropped upon a sheet of damp cartridge paper it will be found that in running together they form quite a number of pleasing patterns, according to the colour used. Other effects can be obtained by slowly tilting the paper in different directions, or by applying the colour with a soft sponge or stencil brush.

Another method is to give the paper a coat of fairly thick paste, and apply the necessary colour with the same brush. Patterns may be evolved by combing this, while still damp, with a piece of cardboard on which a toothed edge has been cut. Experience will prove the size and variety of the tooth. Further effect may be gained by starting with a coloured paper instead of a plain one.

Again, if the pasted paper is spotted and streaked with colour, and then folded and rubbed, it is capable of producing many pleasing patterns. Lightly spraying the pasted paper with several colours and afterwards combing it, produces a new effect.

A great deal depends on the colours chosen, and the proportion that these colours bear to each other. The fact must not be forgotten that they must harmonize, too, with the colour of the cover. It is only by experiment that satisfactory results can be obtained, but the work will prove extremely interesting, and will repay the time and trouble taken over it.

CHAPTER V

MARKING UP—SAWING IN—FIXING LAY CORDS, ORDINARY SEWING—FLEXIBLE SEWING— SEWING ON TAPES OR VELLUM

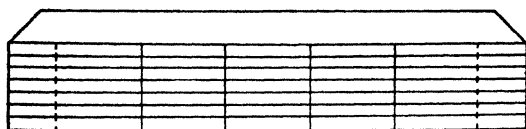
BEFORE sewing the book, the operations of “marking up” and “sawing in” are performed. These operations are governed by the method adopted in sewing. There are three methods in common use, i.e. (1) ordinary sewing, (2) flexible sewing on raised bands, and (3) sewing on tapes or vellum.

MARKING UP. This is the dividing and marking on the back of the sections the positions which the lay cords will occupy. These will vary according to the style used in binding, and also with the size of the book.

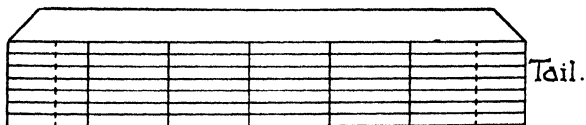
In ordinary sewing, after deciding the number of lay cords to be used, proceed to knock up the sections and screw them in the press with the back projecting above to the extent of about $\frac{1}{2}$ in. Measure and mark, with the use of the try square, pencil lines across the section $\frac{1}{2}$ in. from both head and tail. These indicate the positions of the “kettle” or “catch-up” stitches. The name of these stitches is derived from the fact that the thread used in sewing is here caught up and tied. Using the compasses, divide the space between the kettle stitches into a number of equal parts according to the number of cords used. Four equal parts will be required for three cords, and so on. Pencil lines are marked across the sections as before (Fig. 1, Plate 12).

SAWING IN. A fine tenon saw is used for this purpose.

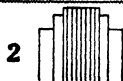
MARKING-UP.



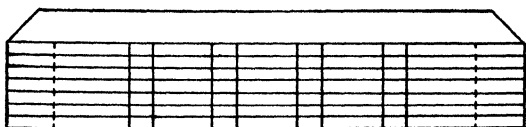
1 Ordinary Sewing.



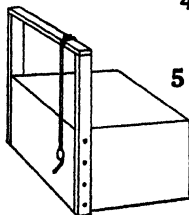
3 Flexible.



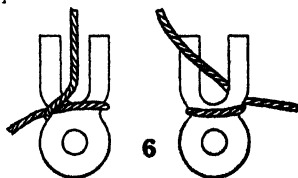
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4 Tapes.



5



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It should be kept sharpened and properly set. With the saw kept perfectly upright, a groove is cut along each of the pencil lines to the depth of the inner leaves of the sections (Fig. 2, Plate 12).

In making up for flexible sewing on raised bands, there is one point of difference between it and ordinary sewing. Used for "tight backs" with bands, the lay cords in this method form the foundation of the ridges to be seen on the back of the book when bound. The lay cord or band, at the bottom of the book, in this instance, is placed at a greater distance from the tail than the top band is from the head. This is to allow for the apparent shortening of the lower division of the back caused by its being slightly hidden when placed upon a bookshelf. The divisions, when marking out, are not equal in this case, allowance being made for the lower band (Fig. 3, Plate 12). In sawing in, only the positions of the kettle stitches are cut, *not* the positions of the cords.

Tapes or vellum sometimes take the place of cord, and when used vary in width from $\frac{1}{2}$ in. to 1 in. In marking up, *double* lines are necessary to indicate the edges of the material used. In sawing in, the position of the kettle stitch only is cut (Fig. 4, Plate 12). This method of sewing is best for books that are liable to hard wear as it is strong and durable. Ledgers, library and school books are invariably sewn in this way.

FIXING THE LAY CORDS. A small quantity of hempen cord will be required, and this should be of medium thickness. In ordinary sewing one strand is used, but where raised bands are required a sufficient number of strands are placed side by side to give the necessary thickness. Where a box has been converted into a

sewing frame the method of fixing the cord is, after having cut them to the length required, to wrap them once or twice round the cross bar and tie them on the front edge, setting them to coincide with the kerfs in the back of the sections. Near the other end of the cord a knot is tied, and a drawing pin inserted so that when the cord is drawn tight the pin can be pushed into the front face of the box, thus holding the cord in position (Fig. 5).

In the standard sewing frame short loops of cord are first tied over the cross bar. The cords are attached to these loops by means of a sailor's knot. A key is slipped just under the front edge of the frame and a cord is passed round the neck of it. After pulling the cord tight, withdraw the key while holding the cord with the finger and thumb to prevent it from slipping. Twist the cord once round the neck of the key, pass the upright cord through the prong, and turn the key over to the right (Fig. 6, Plate 12). This will lock the cord. Along the front edge of the sewing frame a slot is provided, and it is through this slot the key is lowered and pulled through underneath. The key is then turned so that the prongs are at right angles to the slot, thus locking the cord in position. The cords should, of course, coincide with the kerfs in the backs of the sections. When all the cords are fixed a turn is given to the wooden nuts on each of the uprights of the frame to tighten. In the event of one of the cords becoming loose, a small wedge inserted between the loop and crossbar is usually sufficient to tighten it up again. It is absolutely necessary that all the cords shall be quite tight before sewing is commenced.

If not already done, the end papers should now be

marked up, the back of one of the sections being used for the purpose. The kettle-stitch kerfs are not sewn in the end papers.

The sections are now collated, the end papers placed in position, and the whole placed on the back end of the bed of the frame with the fore-edge towards the cords and the end of the book uppermost.

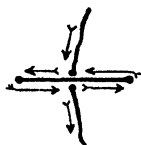
Thread or silk is used for sewing, and is purchased in skeins. If the skeins are cut through once, usable lengths for the needle are obtained. For convenience of handling it is usual to fold the skein once, pass the loop round the upright of the standard frame, or chair back, place the ends through the loop, and pull tight. The threads, as required, are pulled from the centre of the loop.

ORDINARY SEWING. The top end papers are taken and brought over so that the back touches the cords; the needle is inserted at one of the marks indicating the kettle stitch on the upper fold, and taken through inside. The greater part of the thread is drawn through, leaving about 4 in. remaining outside. The needle is then taken out through the first kerf, round the cord, and back through the same kerf, along and out again at the second cord, round the cord, and in again at the same kerf, and so on until the other kettle stitch is reached. The needle is brought to the outside through this kettle-stitch mark (Fig. 1, Plate 13); the piece of thread left at the first kettle stitch is then held firmly while the long end of thread is pulled in the same direction as the back of the papers until it has tightened round each lay cord (Fig. 2, Plate 13). The thread must *never* be pulled at right angles to the back of the papers or sections or else they will be cut. The

end papers will now be found firmly attached to the cords. The first section is now brought over and placed on top of the end papers; the needle is inserted in the kettle-stitch kerf, and this and succeeding sections are sewn in the manner just described. The needle and thread, on emerging from the kettle-stitch kerf of the first section, are pulled as before to tighten the thread round the cords, and then tied to the end left at the first kettle stitch of the end papers. The true kettle stitch is formed when reaching the end of the second section. Here, after the thread is pulled tightly the needle is inserted horizontally between the sections below, and taken round the stitch joining these two sections together; it is then brought out, and the thread tightened until a small loop is left; the needle is passed through this loop and pulled tight, thus forming a kettle stitch, really a knot tied once (Figs. 4 and 5, Plate 13). When the last kettle stitch is reached the thread is tied off twice, and taken one or two sections lower and tied again. When the sewing is finished the lay cords should be found to be embedded in the backs of the sections. The sections should be opened at the centre when sewing, one half being upright and resting against the cords, and the other half held firmly on the end of the frame by the left hand.

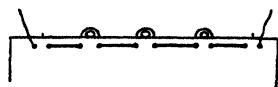
FLEXIBLE SEWING. With the exception of the mode of attaching the thread to the cords, the method of procedure in sewing is the same as described before. The thread, in this instance, instead of going across the back of the cord, goes right round it. The needle is brought out of the section on the far side instead of the near side of the cord, and passed right round the cord as shown in Fig. 3, Plate 13.

OVERCASTING.



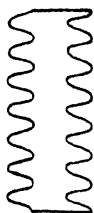
Pamphlet Stitch.

1



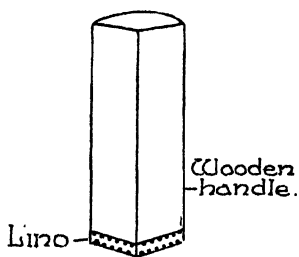
Overcasting.

2



Serrated Guard

3



Lino

4

will be acting in
B 2

Section
Signature.

5



Double Cords.

6

The needle, in sewing, must always pierce the backs of the sections at the exact spot indicated in marking up, or the raised bands will not lie squarely across the back. The thread or silk used must be a continuous piece through the book, and in joining two lengths together care must be taken to see that the knot is firm. A good knot is made as shown in Fig. 6, Plate 13. All the joinings should come inside the sections as they are liable to be broken if placed on the outside.

SEWING ON TAPES OR VELLUM. In fixing the tapes or vellum in the sewing frame, a ruler is passed through two of the loops, on the cross bar, and the tape, etc., passed over this and pinned with an ordinary pin. The other ends are passed through the slot of the frame, pulled tight, and fixed by inserting a drawing pin through them into the underneath part of the frame. They are tightened still further by turning the wooden nuts on the uprights. The positions are governed by the marking up. The method of sewing is similar to that in ordinary sewing, with the exception that after about three sections are sewn the thread is caught up on the outside of the tape and tied. This is done by passing the needle underneath the threads already sewn, forming a loop over them, and tying the loop. The knot should be kept in the centre of the tape. This is done for the purpose of tightening the threads.

Should it be found, after cutting down, that the back of the book is too thick, screw it up in the lying press with about 1 in. of the back projecting, place the knocking-down iron on one side of the book and, with the backing hammer, strike the other side flatly to force the sections together. The tapes or cords are

pulled taut afterwards, both hands being used to prevent them from being pulled right out of the sewing. In flexible sewing the loops of thread round the cords will have to be pushed carefully into their right position.

CHAPTER VI

GLUING UP—ROUNDING—BACKING

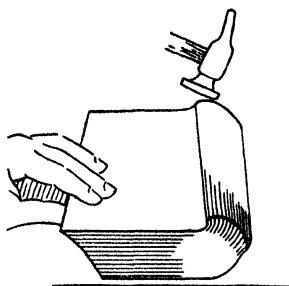
THE operation of sewing having been completed satisfactorily we come to the next process, that of—

GLUING UP. If it has been decided to cut the book *in boards*, the head and back are knocked up, and pieces of old millboard are placed on each side so that their edges come level with the back. The whole is placed in the lying press, which is screwed up sufficiently to hold the back firm. Great care must be taken to prevent the back from slipping down in the middle, which it sometimes has a tendency to do.

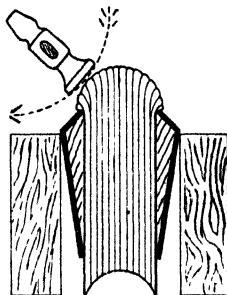
The glue used should be thin (about the consistency of oil) and very hot. The brush is filled, and from the centre the glue is well rubbed into the sections, towards the head and tail. Never work from head to tail towards the centre as by so doing there is a possibility of getting the glue on the edges of the book. After gluing, the book is taken from the press, and, after it is seen that the back and head are still square, the book is laid aside for the glue to harden. It is not quite allowed to set, however, but to reach the stage when it just ceases to become tacky, when the book will be ready for rounding (Plate 15).

ROUNDING. The method of rounding is the same for all books. The book is placed upon a flat surface, such as a table, and the fingers of the left hand placed on upper side and the thumb on the fore-edge, the book lying with the back from the binder. With the fingers, aided by tapping the back with the hammer, the top

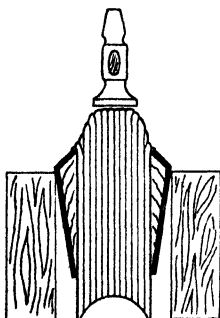
BACKING.



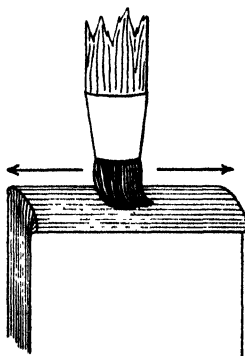
Rounding.



Backing.



Backing
Wrong method.



Gluing.

sections are pulled towards the binder, the thumb being pressed into the fore-edge to assist the operation. The book should then be turned over and the same process repeated on the other side. The correct shape of the back, when finished, should be an arc of a circle, and the book should be turned over and over until this is attained. The shape obtained in the book at this stage remains, and, as it is difficult to remedy a badly shaped back, time should be taken and care exercised to see that it is well formed in the first instance. On the shelf it is the back that meets the critical eye, and nothing seems to show out more than this evidence of poor craftsmanship. The book is now ready for backing.

BACKING. In backing, the sections are bent over to the right and left from the centre for the purpose of forming a groove in which the edge of the boards will eventually rest. This groove acts as a form of hinge for the boards to open and shut upon. The depth of the groove varies according to the thickness of mill-board used in the covers, and also to the material used in covering. The depth is greater for cloth than leather, as will be seen on examination of a cloth-bound book. In it a ridge is seen to project where the boards open; this does not occur in a leather-bound book, the board and the back being quite flush. In backing, pencil lines are marked on the end papers to denote the depth of the groove, and backing boards placed on each side with the top edges level with the lines. Care must be taken in seeing that the boards are quite true with each other and the book. Keeping the whole firmly in position, lower it into the lying press and squeeze it. This is a delicate operation to perform, and frequently the beginner will find that it has to be repeated before

the book is successfully placed. When adjustment is satisfactory the press is squeezed up very tightly to prevent movement in the book during the process of backing. In this the backing hammer is used for plain backs, a smaller one being used where raised bands obtain to enable the binder to work between the bands. Commencing on each side of the centre (Plate 15) the worker gives glancing blows to the sections, working downwards towards the edges, and bending them over to right and left of the centre. A pounding blow should be carefully avoided as this will destroy the shape of the book and damage the sections. The extreme edges of the sides must be well hammered down on to the backing boards so that they will produce a good groove. Bad workmanship in backing results in the leaves being creased at the back when the book is opened. They should lie perfectly flat right in to the back.

In cutting the book *out of boards* the gluing and backing is left until after the book has been cut.

CHAPTER VII

ATTACHING THE BOARDS—SQUARES—LACING IN— JOINTS

THE best material for use as covers is millboard. Hard and durable, it supersedes strawboard, which rarely retains sharp or square edges for any length of time. If the book is to be cut in boards, the time has come to cut and prepare them. Millboards are to be obtained in various sizes, those of most use to the beginner being as follows—

Imperial	.	.	.	.	32 in. × 22½ in.
Extra royal	.	.	.	.	28½ in. × 21½ in.
Large royal	.	.	.	.	26½ in. × 20½ in.
Small royal	.	.	.	.	25½ in. × 19½ in.
Large or medium	.	.	.	.	24 in. × 19 in.
Large middle or large demy	.	.	.	.	23½ in. × 18½ in.
Middle or small demy	.	.	.	.	22½ in. × 18½ in.
Half imperial	.	.	.	.	23½ in. × 16½ in.

The boards are made in thicknesses ranging from $\frac{1}{2}$ in. to $\frac{3}{16}$ in., and are known technically as sixpenny, sevenpenny, eightpenny, eightpenny one cross, eightpenny two cross, and tenpenny. The first three are usually sufficient for ordinary work, but should a greater thickness be required this can be obtained by pasting two boards together. In marking out, a straight line is first drawn on the board to indicate the back edge. The fore-edge should next be marked quite parallel to this, the distance apart being obtained by measuring, with the aid of the wing compasses, from the groove in the back of the book to the width

of the first leaf. The head is next marked exactly at right angles to both back and fore-edge. This can be accomplished by using the try square. The distance from head to tail is obtained by finding the length of the shortest leaf, or where the leaves vary considerably, taking the happy medium. The line indicating the tail should be at right angles to back and fore-edge and parallel to the head. These measurements should be conveyed accurately to various portions of the board, according to the number of covers required. In cutting, a very sharp knife will be required, and the straight edge must be held firmly along the lines drawn on the board. The knife should be kept quite upright when cutting, otherwise a bevelled edge will be produced. If it is intended to cover the book with leather, the boards are now lined with a stout paper; for whole binding they are on both sides (twice on the inside), and for half binding, on one side only, the paper being taken round the back-edge. When lined, the boards should be given a nip in the press and stood up to dry. When dry, the boards should be paired and marked on the outside "back," "head," "tail," "fore-edge," and if more than one pair, the number of the set should be added.

SQUARES. The squares of a board are those portions of it which project beyond the edge of the book. They vary with the size of the book and at the discretion of the binder. The amount taken off the edges of the book when cutting will usually bring about the right projection (Fig. 1, Plate 16).

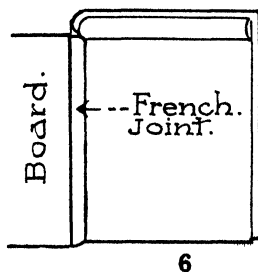
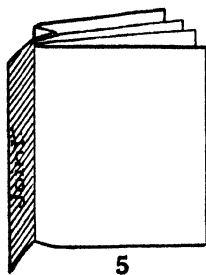
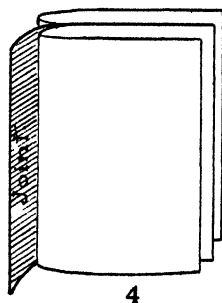
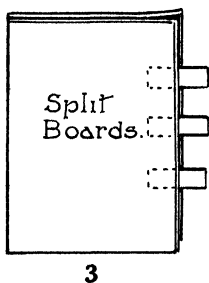
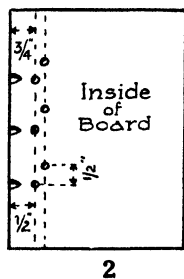
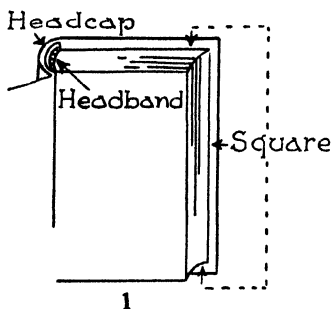
In piercing the boards for lacing in, they are placed in position on the book and the position of the lay cords marked on them with pencil. These marks are

then squared down the board by means of the try square, thus forming lines. About $\frac{1}{2}$ in. from the back-edge draw a line parallel to it and crossing the lines indicating the cords. This distance varies according to the size of the book. The boards are placed on the table, and holes are pierced through them with the bodkin at the intersections of the lines, of sufficient size for the cords to pass through. The board is now turned over and another line is drawn parallel to the back-edge at about $\frac{3}{4}$ in. from it. At the right-hand side of the first holes, and at a distance of $\frac{1}{2}$ in. away, pierce a further set of holes on the line just marked.

Between the first set of holes and the back-edge V-shaped grooves are now cut for the cords to rest in. Where half or whole binding is intended, the corners of the back-edge of the boards are cut away for a short distance.

LACING IN. The lengths of cord projecting from the back of the book are ravelled with the bodkin and the strands slightly scraped with a knife to thin them down. Paste is then rubbed into them, which has the effect of bringing them together again and also forming a point. The cords are now threaded through the first set of holes from the outside. Insert the hand under the cover and pull them tight so that the boards fit into the groove at the back of the book, and then thread them through the second hole from the inside. They are pulled tight, hammered down at the second hole, and cut off close to the board. The laced-in boards should now be placed on the knocking-down iron, and the holes and cords firmly hammered down on the outside. The book is then turned over and the cords hammered down on the inside, great care being taken

BOARDS & JOINTS.



not to cut them. After hammering, both boards are replaced in the groove (Fig. 2, Plate 16).

PRESSING. Place pressing tins between the end papers and the boards on both sides of the book, taking care to push them well back into the groove. Further, tins are placed on the outside of the boards, and pressing boards are placed to cover the tins. After taking every care to see that all parts of the book are set square, the whole is placed in a standing press and screwed down tightly.

While still in the press the back of the book is given a coat of thin paste to moisten it so that all superfluous glue may be scraped off. This is done with a flat piece of wood. The back is then pasted again and rubbed well with a handful of paper shavings. This operation will help the back to set firm and hard. Leave the book in the press for at least twelve hours. Any number of books can be placed in the press at the same time provided that they are exactly over each other.

SPLIT BOARDS. Where tapes or vellum have been used in sewing, the board has to be "made up." Two boards, a thick and a thin one, are glued together with the exception of about $1\frac{1}{2}$ in. or 2 in. from the back-edge, which is left open for the insertion of the tape or vellum. These are pushed between the boards, the gluing of which is then completed. The book is then set square, placed in the press, and cleaned off as before (Fig. 3, Plate 16).

CLOTH OR LEATHER JOINTS. Where extra strength is required it is usual to insert joints between the end papers and the boards. These are made of linen, cloth, or leather, cut into strips, which are fixed in the grooves of the book. Leather is invariably used in

extra bound books. There are three methods of putting in a joint.

Method No. 1. Where the second method (Chapter IV) of making end papers is being used, a strip of material, about $1\frac{1}{4}$ in. wide, is cut, and about $\frac{1}{4}$ in. of this is inserted between the plain and coloured end papers and pasted together with them. The projecting strip is folded over, the stitch passing through this fold when the book is being sewn up. After the book is covered the projecting strip is pasted down to the boards and finally trimmed off with the turnover of the covering material (Fig. 4, Plate 16).

Method No. 2. Where the end papers have been prepared in the first method, as in Chapter IV, similar strips of material are cut, as in method 1, and about $\frac{1}{4}$ in. of the material pasted and fixed into the folded groove of the end papers. When dry, the material should be folded over on to No. 2 end paper (Fig. 5, Plate 16). A strip of paper should be pasted in to protect the joint during forwarding, being torn out with the waste end paper before the joint is pasted down on to the board. Coloured silk to match the material should be used when sewing in the book.

Method No. 3. In this the joint is put in after the book is covered. In making the end papers as in the second method (Chapter IV), a space of about $\frac{1}{2}$ in. is left unpasted from the back. One edge of the joint is inserted and pasted into this space, and the other pasted down on to the boards. The loose coloured end papers are cut off to be pasted down on the boards later. The pasted down coloured end paper is trimmed back a little from the back of the book so that a portion of the joint is seen on the book side. If linen or

cloth has been used for covering the book it is then given a nip in the press with the boards closed; if leather, the boards are thrown back first. After taking the book from the press it is allowed to stand open and dry, and finally placed under a weight.

LEATHER JOINTS. The strips of leather forming the joints must first be pared down on the edge to be inserted between the end papers (see "Paring," Chapter X). The outer edge is pared to the same thickness as the turnovers of the cover of the book. This will be pasted down on the boards.

Where more play is required at the joint of the covers a French joint is used (Fig. 6, Plate 16). In this instance the boards, when being attached to the book, are placed at a distance of about $\frac{1}{16}$ in. to $\frac{3}{16}$ in. away (Fig. 6) from the groove. In covering such a book with leather, the back is not pared down to the same extent as when other joints are used. The book should be sewn on tapes or vellum when this joint is used.

CHAPTER VIII

CUTTING IN BOARDS—CUTTING OUT OF BOARDS— ROUNDING CORNERS

CUTTING IN BOARDS. In cutting a book the edges are taken in the following order, first the head, then the tail, and finally the fore-edge. After pressing, all tins are removed from the back, and it is placed in the lying press with the back towards the binder. The board on the right-hand side is pulled down until the amount to be cut off the leaves shows above the board. A waste piece of millboard is placed between the book and the left-hand board to form a "cut against," which protects the board. In lowering the book into the press it is screwed up just tightly enough to allow the right-hand board to be pressed down flush with the top surface of the press, and the left-hand board slightly above and quite parallel to it. It is then screwed up quite tightly. Great care must be taken with this operation, for unless the right-hand board is exactly flush with, and the left-hand board exactly parallel to, the face of the press, the result will be a badly squared book (Fig. 1, Plate 17).

Do not cut too much from the edges; the exact amount was decided when measuring for millboards, and this should be adhered to now.

Before cutting, the knife of the plough should be trued up; unless this is done the edges of the book will not be square when cut. Always cut *forward*, and at each cut give the screw of the plough a very slight *turn* (Fig. 2, Plate 17). Do not try to cut too much at

once. Ragged edges are caused by turning the screw too much ; a knife insufficiently sharp ; or the book not being screwed up tightly enough in the press.

The book is turned upside down to cut the tail, the same process being used as for cutting the head.

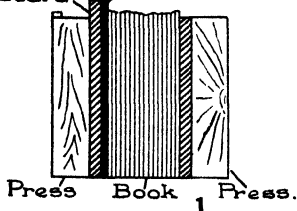
In cutting the fore-edge the boards are first pushed back so that the depth of the "squares" at head and tail are equal. With the head of the book towards the binder, a pencil is drawn along the right-hand fore-edge of the boards so as to form a line on the end paper. The depths of the squares at head and tail are taken with the compasses, and marked inwards from this line. A second line is then drawn which will indicate the amount to be cut off the fore-edge. The boards are turned back and allowed to hang down, while at the top and bottom cords *trindles* are inserted between the back edges of the boards and the back (Fig. 3, Plate 17).

Next bring the boards to a horizontal position so that the trindles rest on the inside of them ; this will cause the back of the book to resume a flat position. The binder now takes the book in both hands and "knocks it up" on a flat surface to render the back quite flat.

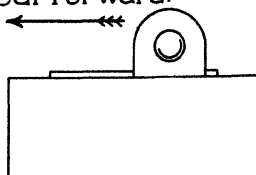
The cutting boards are now placed on each side of the book, having first damped them slightly with a sponge. Their top edges should be quite level with the pencil lines on the end papers, the right-hand side board being level with the lower line. Gripping the boards and book together with the left hand, the binder removes the trindles, and lowers the book and boards into the press. The right-hand board should be level with the top of the press and the left-hand board projecting above to the amount to be cut off (Fig. 4). Time should be taken to fix everything as accurately

CUTTING THE EDGES.

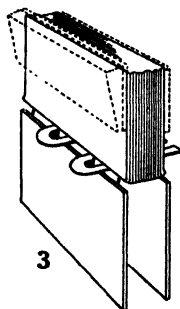
Pressing Board. Cut-against.



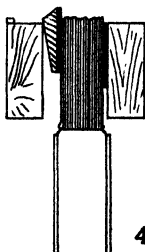
Cut Forward.



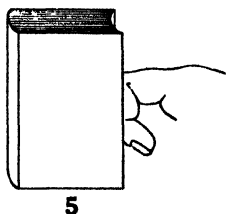
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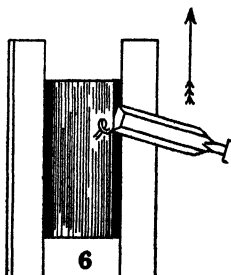
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6

as possible, as any discrepancy will show when the book is cut. The press should be screwed up quite tightly before cutting, which is done in the same way as at head and tail. The left-hand cutting board forms the cut-against for the fore-edge. When cut, the book is taken from the press and the boards placed back into their proper positions. Placing the knuckle of the first finger of the right hand in the centre of the fore-edge, push the back of the book into its proper position. This produces a *concave* surface in the fore-edge (Fig. 5).

CUTTING OUT OF BOARDS. There are various ways of cutting out of boards. They may be cut with the guillotine after the operation of sewing and before rounding and backing has been done; or they may be cut with a carpenter's firmer chisel in the press after sewing. The flat of the chisel is placed on face of the press and the book is cut with a forward movement, care being taken to hold the chisel firmly down, and at a slight angle to the book. The surfaces are finished off with very fine glasspaper. The chisel must be very sharp, and care taken in cutting but a few leaves at a time (Fig. 6).

Another method consists in attaching the board temporarily to the waste sheets of the end papers in the same positions as in cutting in boards. A waste piece of millboard is placed between the book and boards when it is lowered into the press and cut with the plough as before.

ROUNDED CORNERS. Should rounded corners be desired they can be obtained by marking them off with any object that will describe an arc of a circle, and cutting the angle away neatly with a very sharp knife or carpenter's chisel. They are finished off with very fine glasspaper.

CHAPTER IX

SPRINKLING—SCRAPING—GILDING—HEAD BANDS— CAPPING

MUCH time and thought have been spent on the decoration of the edges, the fore-edge, as an instance, having at one time a miniature water-colour drawing placed under its gilding so that if viewed in one light the drawing was seen, in another, the gold only. There is plenty of scope for the display of taste, but until efficiency has been gained the beginner should be content with the simpler methods of decoration. The great disadvantage of leaving the edges plain is that they become very quickly soiled, and so spoil an otherwise charming piece of craftsmanship.

One of the simplest methods of decoration is—

PLAIN COLOURING. The book is first screwed up tightly in the press to prevent the colour from spreading to the inside of the leaves. Water-colours or dyes may be used, and these are mixed with clean water to a tone harmonizing with the covers. The colour is applied to the edges with a small sponge. The fore-edge is first treated, starting from the centre and working outwards to head and tail until the desired tone is obtained. The head and tail follow next, the sponge being applied at the back and worked towards the fore-edge. If worked in the opposite direction the result will be a dark mass of colour at the ends of the fore-edge. Care must be taken to see that the head and tail attain the same depth of colour as the fore-edge. After colouring the edges should be burnished.

SPRINKLING. The sprinkle is composed of "raddle" ground up with paste, and dissolved in water. A small quantity of raddle is placed on a glass slab, a little thin paste and a few drops of oil are added, and the whole well mixed together and ground with an old table knife. When the pigment has been ground well, it is placed in a jar and enough water added to dissolve it.

Before sprinkling, the covers are protected by wrapping them in paper. The book is lowered into the press with the fore-edge upwards and screwed up. A large brush, after being well filled with the pigment, is first pressed against the side and then struck on the top edge of the jar until most of the sprinkle is beaten out, and the spots which fall are very fine. The handle of the brush is carefully wiped. A stick or small iron bar is held above the book, and the brush is struck on it, thus causing the sprinkle to cover the edges of the book. The sprinkle should be kept very regular. Wipe the bar and handle of the brush occasionally to prevent large blobs of colour from being thrown on to the edges. Another way of doing this is to use an old toothbrush with stiff bristles. The same mixture is used as before; the brush is filled and then rubbed on the top of the jar until the sprinkle becomes fine, when it is held over the book and the bristles rubbed either with a steel knitting needle or other tool, or with an oiled finger.

GILT EDGES. Before gilding, the cut edges are prepared first by scraping and then by polishing. These processes are accomplished with the book quite firmly in the press between two boards, which should be quite flush with the edges of the leaves.

SCRAPING. The scraper is formed of a piece of

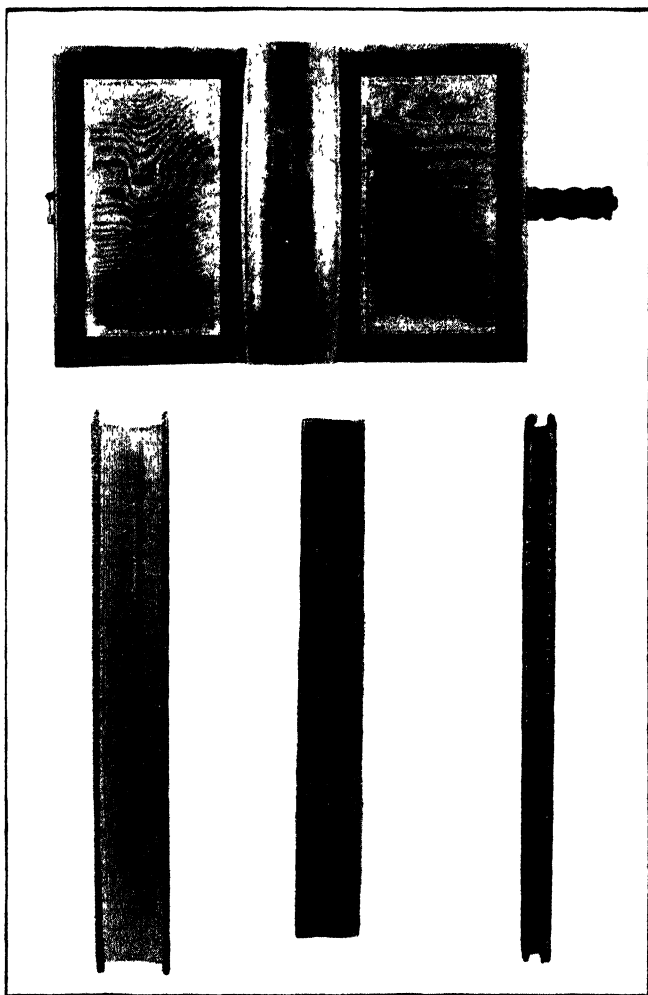


PLATE 18. FINISHING THE EDGES

tempered steel, one edge of which has been burred by rubbing with the bodkin. The scraper is held at a slight angle between the fingers and thumbs of both hands and pushed forward so that the burr just catches the paper and produces very fine shavings (Fig. 1, Plate 19). Great care must be taken not to disturb the squareness of the edges. After scraping, a piece of very fine glasspaper is wrapped round a piece of wood, or other material, and rubbed up and down the edges until a very smooth surface has been produced.

POLISHING. A mixture for this purpose is prepared by mixing red chalk or bole with *glaire* until it becomes a paste. This paste is rubbed evenly over the surface of the edges, and afterwards polished with a fairly hard brush.

GOLD LEAF. This is obtained in small books containing twenty-five leaves, and can be had in two forms, with the gold leaf loose, or adhering to the paper. There are nine tones to choose from—light, medium, and deep yellow; light, medium, and deep green; and light, medium and deep red, the choice being governed by the colour of the covers. For the beginner the fixed gold leaf is the best as it can be taken straight out of the book and cut to the required shape with scissors. If the loose leaf is used great care must be exercised in handling it, for the least draught is sufficient to blow it away and damage it. The best way of dealing with it when small quantities are being used is to detach a spare paper from the book, rub it over the hair of the head, and place it over the gold leaf, when it will be found to adhere to the paper sufficiently to be dealt with by means of the scissors. Where large surfaces are being coped with

the gold leaf is taken from the book by placing the gold knife under the centre of the square, lifting it up, and turning it right over on to the *gold cushion*. The gold is flattened out by breathing on it a little. The cutting is accomplished by moving the knife across it with a sawing motion. Strips of clean white paper should be cut a little wider and larger than the edges, and prepared by either rubbing them with a little beeswax, or on the hair of the head, and with these the gold can be lifted from the cushion.

When the strips of gold are ready, a coat of *glaire* is given to the polished edges of the book, this being applied with a large soft camel-hair brush. While it is still wet the gold leaf is lowered until it just touches the *glaire*. In coming into contact with the *glaire* the gold will be pulled from the paper, and when the *glaire* dries the gold will adhere to the surface of the edges. Should the gold break in applying, another piece should be placed immediately over the affected part. The edges, when gilded, should be allowed to dry for an hour. When dry the gold is set with an *agate flat burnisher* (Fig. 2, Plate 19). A sheet of clean laid note-paper, which has had a little beeswax rubbed over its surface, is placed over the gold with the waxed side down and rubbed from *side to side* with the burnisher. After being set with the paper the gold is burnished in a similar manner without the paper.

Coloured edges are burnished by first rubbing a little wax over them, and then proceeding with the burnisher, as before. A flat burnisher is used for flat edges, but in the case of concave edges, the tooth burnisher (Fig. 2, Plate 19) comes into use. Care must be exercised in using this tool. It should be moved backwards and

right, taken *under* and then *over* the support. This latter movement is repeated to obtain two strands of yellow over the support. The green is then brought over the yellow in a similar manner and two wrappings made (Fig. 4). The yellow next comes over the green, and so on. Where one silk passes over the other is known as the *beading*, and this should be kept quite close to the book. The quality of a head band is judged by the neatness of the beading. In working along the head band, it is tied down at about every fourth section by taking the needle down and through the section as at the commencement. The opposite side of the book being reached, the needle is passed through the middle of the last section but one, and the silk cut off. Both ends are carried round the support and then glued down to the back of the book. The projecting ends of the support are cut off close to the silk, and a little glue is applied where the band is tied down to hold it more firmly to the back. The tail of the book is treated in the same way. Afterwards the book is lined up by gluing a strip of strong brown paper, of a width equal to the book, from the head and tail to the first sewing bands. If the book is a large one, similar pieces are glued between each band; and, if a plain back, a strip is taken the whole length. The brown paper is rubbed down well with the bone folder, and, when dry, the paper over the silk tying-down strands is removed by the use of a piece of fine glass-paper.

When the head bands have been purchased, they are cut off to the required length, neatly glued to the top and bottom edges of the book, the back being lined up as before.

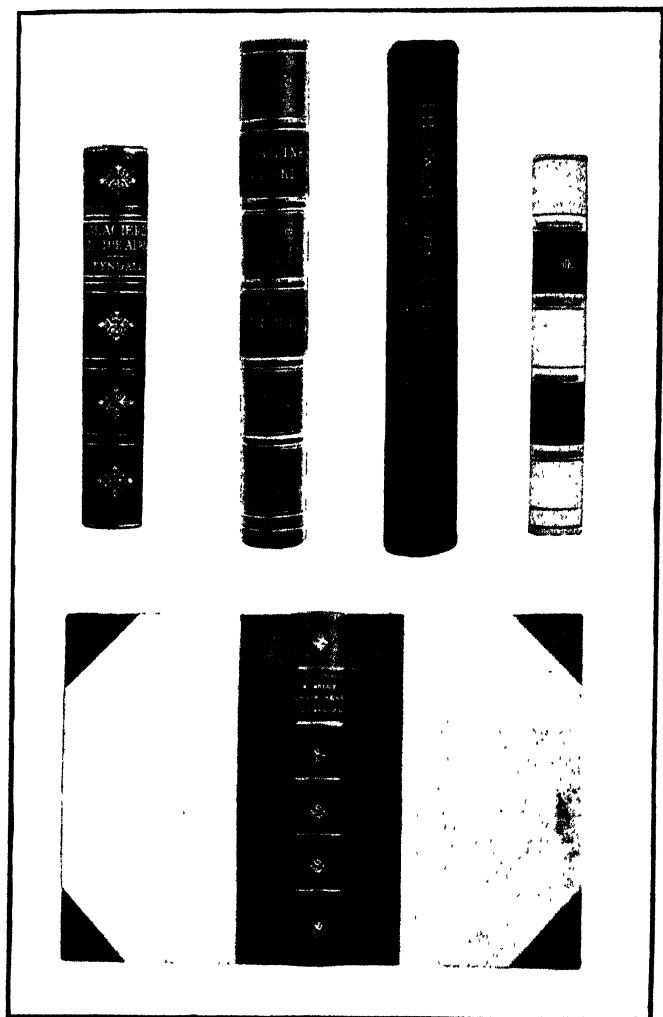


PLATE 20. BACKS (HALF-BINDING)

CAPPING. In order to protect them during further operations, the edges have a covering of paper placed over them. A sheet of paper is required, twice the width of the back plus the back or thickness, and in length the distance from head to tail plus twice the thickness and a bit to spare. Place the paper between one of the boards and the end paper so that the board holds it in position when closed. The paper is now moved until the amounts at head and tail are equal, and the paper cut to the shape as shown in Fig. 4, Plate 19. The other board is now opened and the paper folded over the fore-edge and on to the end paper. The longer pieces are bent over and tucked under the piece covering the fore-edge, and the projecting pieces folded over and attached with a little glue to the large side pieces. The boards are closed and the capping allowed to remain until the book is finished.

CHAPTER X

COVERING—WHOLE BINDING—PARING THE LEATHER—
HEAD CAP—TURNING IN—MITREING—HALF BINDING—
FILLING IN—CLOTH BINDING—HOLLOW BACKS—
VELLUM-BOUND BOOKS

A VERY great deal depends upon the material used as to the method adopted in covering.

WHOLE BINDING. In this the whole of the outside of the book is covered with leather of some particular kind.

HALF BINDING. Here the back, a portion of the sides, and the four corners are covered with leather, the remaining portion of the boards being covered with cloth, linen, or paper.

CLOTH BINDING. Where the book is entirely covered with linen or cloth.

VELLUM-BOUND BOOKS. In this style the book is bound entirely in vellum.

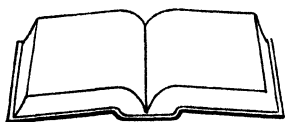
Before proceeding to the covering of the book it is essential that the difference between a *tight* and a *hollow* back should be explained. It will be seen in Figs. 1 and 2, Plate 21, that in the tight back the leather is attached to the back of the book whereas in the hollow back it is not. Where a tight back is required it is usually sewn flexibly around raised bands. The flexible tight back is much stronger than the hollow, but has the disadvantage of eventually damaging any gold tooling which may be placed upon it. This is caused by the strain being conveyed over the whole of the back and joints in opening the book.

In the hollow back the strain is transferred to the sections. Much is claimed for both types of backs, but generally the tight back is preferred by craftsmen. In covering in calf or vellum it is advisable to forward for a hollow back; any other material can also be used for this type of back.

WHOLE BINDING. In covering a book in morocco or other leather where it has been sewn flexibly on raised bands, the book is first laid flat on the skin of leather, and a pencil line drawn right round the board; the book is raised up and rolled over until the other side is flat on the leather, and another pencil line drawn round its board. The leather is cut about $\frac{3}{4}$ in. beyond these lines. After cutting, the leather must be pared all round the outer edges for the distance beyond the pencil lines, and also down the centre for the width of the back, pencil lines being used as a guide.

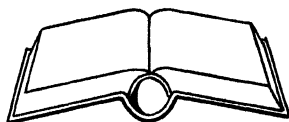
PARING THE LEATHER. The leather is placed, with the flesh side upwards, on a plate of sheet glass. The paring knife should be flexible and sharp. The leather is held with the left hand, while the knife is held at a low angle and pushed forward, taking off a thin shaving in the process. Great care must be exercised if success is to be achieved as it is a very easy matter to cut right through the leather. The leather must be taken off quite evenly; thin places will show themselves when the book is covered. When the paring has been done the book is placed on the leather as before, and a pencil line drawn round the edges of the boards. The leather beyond these lines is termed the turn-over. In paring, the leather is treated by folding between the thumb and finger to judge whether enough has been taken away to allow it to go over the edges

BACKS, CORNERS, ETC.



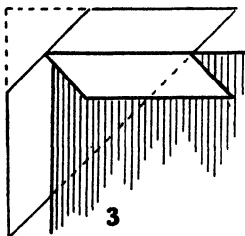
Tight Back

1

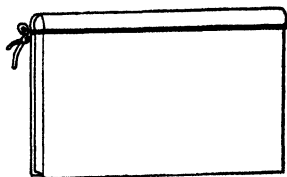


Hollow Back.

2



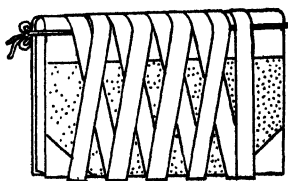
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5



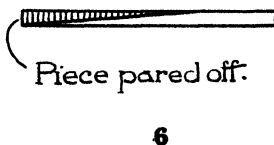
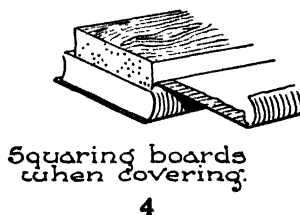
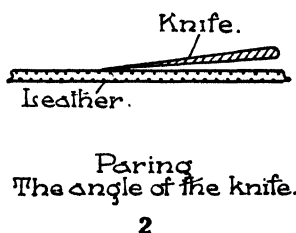
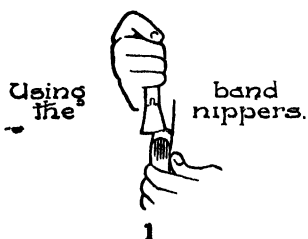
6

of the board properly. The extreme edges are next trimmed down to feather edge. When this has been satisfactorily accomplished the leather is given a coat of paste and put aside for a time to soak. Before covering, the squares of the book are accurately set. The leather should now be given another coat of paste, great care being taken that no lumps, grit, or bristles are left upon it. One side of the book is placed on the pasted leather so that it coincides with the pencil marks; the loose portion is then pulled gently over the back and laid down on the top board. The book is then lifted up, and stood on the fore-edge on a piece of clean paper. The cover is now firmly pressed down between the boards on the back with the aid of a bone folder, the band nippers being used to obtain a closer contact with the projecting lay cords. The nippers should be worked backwards and forwards across the back until a good shape has been given to the bands (Plate 22). Before leaving the back make sure that the leather is in close contact all over. The turnover at the head and tail is next brought over the edges of the boards and turned in at the back, forming a double thickness of leather. This turning should be a little above the head band, to be bent over later to form the *head cap*.

HEAD CAP. In forming the head cap care must be taken not to turn too much leather in, or yet not enough. A little practice will aid the judgment as to just how much is required to form the perfect head cap, and the examination of finished specimens will be of considerable assistance (Plate 21).

TURNING IN. The turnover, when brought over the edge of the board to the inside, must be well rubbed

PARING, ETC.



down. The top and bottom edges are treated first. Before the fore-edges are turned in, the boards must be set squarely in the joint. To do this the book is laid flat on its side, the upper cover lifted, and a pressing board is laid on the book and pushed well up to the joint and held firmly. The covered board is brought into contact with the pressing board, and the leather at the ends is pressed in firmly until the joint is quite square. The best method of dealing with the corners is to mark a point between the corner of the leather and the board. The distance from the corner of the board should be equal to the thickness of the board. Through this point draw a line at 45° to both edges of the board, and cut off the triangular piece of leather so formed. Repeat at each corner in turn. The fore-edge is now turned in, the leather being well drawn over the corners (Fig. 3, Plate 21). When dry they are mitred to an angle of 45° . The other side of the book is treated in a similar manner.

When the book has been satisfactorily covered, a piece of thread is taken round the joints, and at the same time slipped into the little nicks formed by cutting off the back edges of the boards, and tied (Fig. 4, Plate 21).

The head caps are now formed. With the aid of a bone folder the projecting leather is pressed outwards at each end of the head band, and flattened on the top. Place the book, end down, on a piece of plate-glass and press the back edge of the head cap with the folder so as to form a square edge (Fig. 5, Plate 21).

To render the leather more pliable during the covering it will probably be found necessary to moisten it with a sponge and water; this will also ensure its

proper adhesion to the boards. As a precaution against the back not setting well, it is advisable to bind the book round with broad tape and sew in (Fig. 6, Plate 21). This is known as "tying up." The book is then placed under a light weight to allow it to set.

MITREING THE CORNERS. When dry, a pencil line is drawn at an angle of 45° from the extreme corner, and a sloping cut is made with a sharp knife along the line, through the two pieces of leather down to the board. The sloping cut ensures an accurate joint in the mitre. It should not be cut quite up to the corner as this would have a tendency to weaken it. The leather is lifted for a little distance on each side of the cut and the waste piece is removed. The two edges of the mitre are tested to see if they are accurate, and are then pasted and firmly pressed into position.

Leather joints are pasted down to the boards at this stage. All waste glue, etc., is cleaned out from the groove, the waste end paper torn out, and the joint then pasted to the board. The corners are mitred as before.

A line is next drawn round the turnover to the required depth, and the superfluous leather cut away, leaving the margins parallel to the edges. To fill in the space in the centre of the board a sheet of brown or cartridge paper is cut a fraction less than the size required, and pasted in. The damp paper will stretch slightly during this process, and so fill up the space. It should be well rubbed down to ensure its sticking all over. The book is then stood open and allowed to dry.

HALF-BINDING. The book is said to be half-bound when the leather extends over the back, a portion of

the sides and on the four corners (Plate 20). The sides are covered to the proportion of about one-fourth of the whole width, while in three-quarter binding it is one-third. For half-binding the books are usually either sewn flexibly for a tight back, or on tapes. When the book is ready for covering, pencil lines are marked on each cover to indicate the position of the edges of the leather. A strip of paper, or measuring tape, is taken over the back of the book, the whole width of the leather is determined, and a strip of the leather decided upon is cut to this width, and about $1\frac{1}{2}$ in. longer than the back, from head to tail. The pieces for the four corners are then cut, Fig. 1, Plate 23, showing how this can be done without loss of leather. All the edges must now be pared until they are capable of being turned over easily. The leather for the back is also pared where the joints will occur, and at the head and tail for the head cap. This is then pasted, placed in position on the book, turned in, the joints set squarely, and the head caps formed as in whole-binding. The corner pieces are pasted, one at a time, and are carefully fixed in position, the same method for turning and mitreing being used as in whole-binding. The edges of the leather, on the inside of the board, are then trimmed parallel to the board, and the spaces on the outside of the board brought up level with the leather by pasting on pieces of stout paper. The edges of this paper must be turned over to the inside if the leather is at all thick; and great care taken that it fits accurately up to the edges of the leather.

FILLING IN. The selected material is cut exactly to the same shape as the paper filling, and allowance

is made for turning over at head, tail, and fore-edge (Fig. 2). In placing it on the book see that the edges fit accurately to the leather. The filling should be well rubbed down, the edges turned over, and when dry trimmed into line with the leather. For linen or paper, paste should be used, while glue is better for cloth. The panel inside the board is fixed in the same way as in whole binding.

CLOTH BINDING. Embracing, as it does, both linen and cloth, all books in this style of binding should be arranged for a hollow back. It is advisable also that they should be sewn on tapes, thus forming a much more satisfactory and stronger binding than where ordinary sewing is employed.

HOLLOW BACKS. One style of lining up for a hollow back is known technically as "two on and two off." It is produced by first lining the whole of the back with a piece of stiff brown paper which is well rubbed down with the bone folder. This is next glued over, and another piece of paper, a little shorter than the back, and three times as wide, is placed over it so that its edge does not come quite up to the edge of the left-hand side of the book. This second thickness is well rubbed down, creased at the right-hand side of the book, and brought over to the left, where it adheres to the small glued portions left. It will be found that this will be sufficient to hold it down if rubbed well. The top of this last fold of paper is then glued, and the remaining piece is creased on the left and brought over to the right and rubbed down. It will be seen that two thicknesses have been attached to the back of the book and two others semi-detached from it, being held or connected at each edge (Fig. 3, Plate 23).

Another method is to take a piece of strong brown paper a little longer than the back and three times its width measured over its convex surface. The paper is folded twice lengthwise, *inwards*, so that when the two flaps are glued together, it forms a tube with a single thickness of paper on one half, and a double thickness on the other. The single half is attached to the back with glue, great care being taken to see that the edges coincide with the joints, and rubbed down. When dry, the folded edges are cut down for a short distance at both head and tail to allow the covering material to pass between the single and double thickness (Fig. 4).

Still another method is to take a piece of stiff paper, a little shorter than the back and three times the width, and to fold it inwards into three equal parts. The middle portion is glued to the back, the left folded over, and the right folded over that and glued to it.

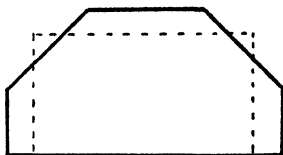
In covering, an allowance of about $\frac{1}{2}$ in. is allowed for turning over. The material is given a coat of paste or glue according to type used, the book placed side down upon it, the material pulled carefully over on to the other side, and turned in at head and tail over the boards and between two papers forming the hollow back (Fig. 5). As there are no head bands in this style of binding, no head caps will be required. Set the joints squarely, turn in the fore-edges, and finish off the corners as described in whole-binding. The material occupying the position of the head cap should be flattened down with the bone folder. Unless it is covered with "grained" cloth, the book should now be given a nip in the standing press, and then placed under a light weight and left for several hours.

When a hollow back has been used with a leather

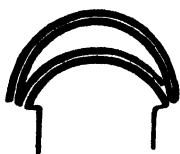
HOLLOW BACKS.

Cutting leather
for corners.

1

Development
of sides.

2

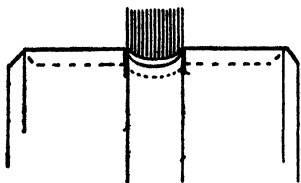


Forms of hollow back.

3



4

Slitting for
turning in.

5

Leather band.



False bands.

6

covering, it is usual to put on false bands. After the back has been lined up, strips of leather of similar width to the bands are glued in correct position on the outside lining paper, and the ends rounded off. The covering is worked over the stuck-on bands as in whole binding (Fig. 6).

VELLUM-BOUND BOOKS. These books are best sewn on tapes or vellum, forwarded for a hollow back, and a French joint used owing to the stiff nature of the material. The vellum should be lined with white paper before covering. This is placed on the flesh side as this goes next to the boards. The lining paper is pasted, placed on another sheet of paper, paste-side down to remove marks made by the brush, lifted, attached to the vellum, and given a nip in the press. It is then ready for pasting and putting on the book. With the exception of the turnings in, which may be pared or damped with hot water, the method of covering is the same as with leather. Care should be taken not to stretch the vellum, or the shrinkage will pull the covers over, and it will be impossible to close the book. The corners should be pared and treated as before.

CASE BINDING. It is usual, when issuing a book in parts, for the publishers to supply their own cases for binding. The cases consist of covered boards on which the title and decoration has been "blocked," or plate stamped. The forwarding is done in the usual way, but it should be remembered that in this instance the book has to fit the covers, not the covers the book. Cords or tapes can be used in sewing the sections together. After the book has been rounded and backed, the back is given a thin coating of glue, and a piece of "mull" placed over it. Mull is a coarse muslin, and is

used to supplement the cords, which, in case binding, are not laced in to the cover. The piece required should extend over the back of the book and about an inch each side, and should be a little less than the length of the book. The mull is well rubbed down and the brown-paper lining and hollow back, is worked over it in the usual way. In getting in to covers, the cords are ravelled at the ends, well filled with paste, and fanned out. The boards are pasted or glued on the back edges, the mull well rubbed down on to them, and the fanned ends of the cords brought down and well hammered. This operation is carried out by first placing the book upright and centrally between the covers, and testing for accuracy by bringing covers up. Still holding the book in an upright position, the mull and cords, first one side and then the other, are worked down. Pressing plates are next placed on the covers, the book closed, and given a nip in the standing press. Afterwards the end papers are cut to shape and pasted down.

Where the binder makes his own cases, he should take great care in measuring the back of the forwarded book to obtain the distance at which he has to place the boards apart when covering them. If the distance allowed is too narrow, the covers will not close over the book, and if too wide, a slovenly appearance will be given to the back.

CHAPTER XI

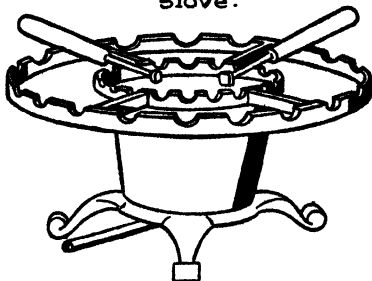
FINISHING—PASTE WASHING—MARKING OUT—HEATING
TOOLS—LETTERING—GOLD TOOLING—BLIND TOOLING—
PASTING DOWN, OPEN—PASTING DOWN, SHUT

PASTE WASHING. The first operation in finishing is to wash the cover over with either paste water or vinegar. If the first is used it is made by adding a little paste to clean water, and stirring it well until the water has a milky appearance. Paste water is used when the leather is of a porous nature. Where vinegar is used it is *absolutely essential* that it shall be of good quality. Used for non-porous leathers, it has the advantage of keeping them in a moist condition. The washing is for the purpose of preventing the glaire sinking into and staining the leather. Holding the book in the left hand, with the thumb and fingers placed between the boards and back, apply the wash with a small sponge evenly over the covers. The book is then stood on its edges to dry.

MARKING OUT. When the book is dry the lines of decoration are marked out. In tooling, the inside of the cover (if necessary) is done first, the back lettered and decorated next, and lastly, the decoration is worked on the sides. Where straight lined ornament only is being used the requisite measurements are marked on the leather with the spring dividers, and the marks, or points, joined up to form lines by the use of a bone folder and ruler. Where more elaborate designs are being followed they are planned out by the finishing tools on a sheet of tough, thin paper. This can be done

THE USE OF TOOLS.

The Finisher's
stove.



The nick in the side of the tool is a guide to show the right way of the pattern when in use.

Strip of paper folded round book as a guide when lettering



Method
of holding
tools.



by inking their surfaces on an inking pad, and impressing them in their correct positions on the paper. When complete, the paper is placed in position on the book, and held with paper clips or a little paste while the impressions are taken through on to the book by means of the tools which have been heated on the stove. It is sometimes necessary to go over them again after the paper is removed to make them cleaner. Straight lines should be ruled directly on to the cover afterwards. Only the positions of the corner angles being marked through the paper.

HEATING FINISHING TOOLS. The stove in use for heating the finishing tools is illustrated in Fig. 1, Plate 24. A gas ring can easily be adapted to the purpose. The correct heat at which to apply the tools can only be gauged through actual practice. The heat required varies according to the kind of leather used in covering. As an aid to the beginner, who usually uses too warm tools, the following methods of testing for heat are given: If, when the tool has been heated, a spot of water dropped on the shank dries off without hissing, the tool may be said to be *warm*; should a hissing sound be given off, it may be said to be of *medium heat*; if the water hisses and dries up instantly, the tool is *hot*. There is always a danger of burning the material at this stage. For non-porous leather, like morocco, the tool is used when *warm*; for porous leathers, linen, etc., medium heat will be required. The fact that the leather may be either dry or moist alters the degree of heat used to the extent that a dry leather requires a slightly hotter tool than a moist one. Tools that have become too hot can be cooled by applying them to a damp rag kept in a saucer. The

cooler the tool, the more time can be spent in working it. A hot tool should be placed in position and lifted off again as soon as possible, otherwise the albumen in the glaire will evaporate.

BANDS LETTERING. For a book with bands the lettering should be placed in the panels or spaces between the bands. The title, if a short one, can be placed in the second panel from the top of the book, and the author's name can be placed in either of the three following panels. This is, of course, governed entirely by the size of the book. The date of publication, and other details, are also placed in one or other of the three lower panels. In lettering, it will be helpful to the beginner if long strips of paper are taken over the back, down the sides, and tucked inside the book (Fig. 2, Plate 24). On the portion of this paper covering the back, the lettering is spaced out, either by tool impressions, as previously described, or with pencil, and eventually *blinded in* through the paper. Lines and other decorations are also tooled in blind to begin with. Where calf or linen have been used for covering, the lettering, instead of being worked directly on to the book, is tooled on what is known as letter pieces (Plate 25). These are pieces of leather of a colour contrasting with the book, pared to the thinness of paper, and pasted to the back of the book. If the book is a plain one, the lettering may run from tail to head, or across, if the width allows for this.

During the process of lettering and decorating the back, the book is protected in the press by a strip of baize or other material being placed on each side. The tools should always be placed in proper order on the gas ring, and, after being used, should be returned

to the same position. In blinding in impressions the tools may be cooler than when used for gold tooling. The tools are held firmly in the right hand with the thumb on the top, and are guided by the thumb and first finger of the left hand (Plate 24). The face of the tool should always be kept level with the surface of the cover, and a downward uniform pressure given when making impressions.

GOLD TOOLING. Before the gold is applied, the lower surfaces of the blind impressions are given a coat or two of glaire. This is used to hold the gold leaf to the impressions, and is applied with a sable brush. Great care must be exercised in placing it on the lower surface only, or it will spread and soil the leather surrounding the impressions. Glaire dries very quickly, especially if the room be warm, so that only as much work should be glaired as can be dealt with before it becomes too dry. As a rule, the gold is placed on the glaire just as it dries. The gold leaf is prepared in a similar manner as described for gilding edges. Before the gold is applied to the glaire, a pad of cotton wool, with just a trace of olive oil on it, is passed lightly over it in order to hold the gold leaf to the surface ready for tooling. Great care must be taken in doing this on light and delicately coloured leathers. The paper on which the gold adheres is placed face downwards, over the impression, and pressed lightly with a piece of cotton wool. Where loose leaf is being used it is picked up with a wad of cotton wool, which has been slightly greased by rubbing it on the hair or face, and so placed over the slightly greased impression, and a firm, even pressure applied. The tools are again heated and tested. If it is necessary to cool them, place the shank,

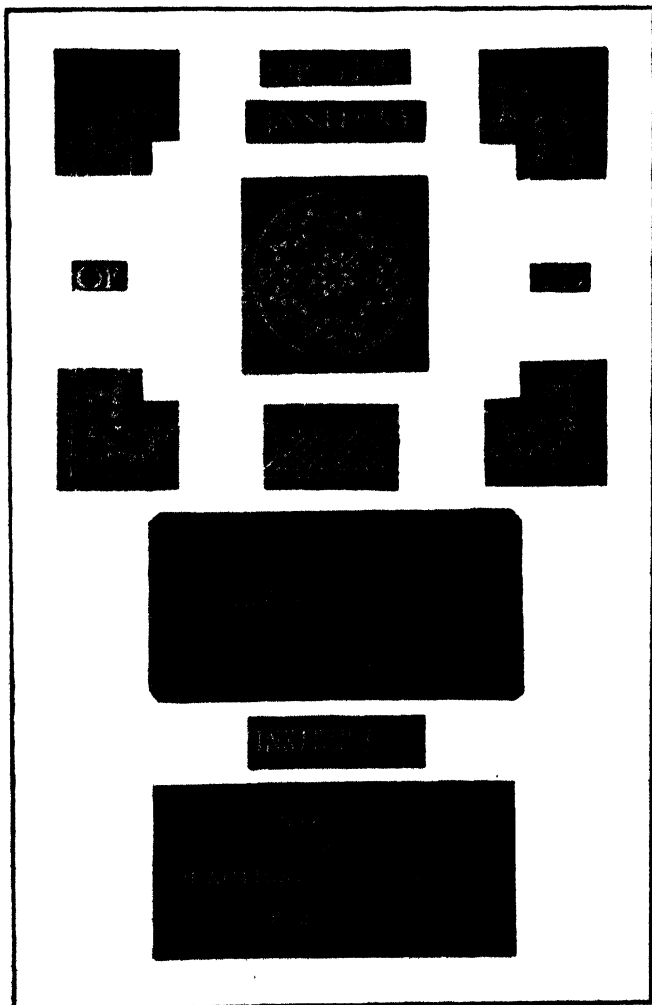


PLATE 25. GOLD-TOOLING

not the face, on the damp rag. The heated tool has now to be placed in *exactly* the same impression over the gold that was made when blinding in. This will require practice, for, if not accurately done, a double impression (technically known as "doubling"), will occur. The sense of touch must be trained to feel the tool "click in." When accurately placed, the tool is given a steady and even downward pressure. If the tool has been too hot the gold impression will be dull; breaks occurring in the leaf go to show that the tool is too cold. To repair a break, breathe upon the surface and immediately apply a fresh piece of gold leaf, and use a slightly hotter tool. It is sometimes necessary to re-glaire and re-strike the impression again. When the whole of the tooling is done, the surplus gold is removed by rubbing the surface of the leather with a bookbinder's rubber. This specially prepared rubber can be pointed to clean up edges, or the sides of impressions.

The straight lines occurring on the sides of the book are worked with a fillet, while for the lines on each side of the bands on the back a pallet is used. The sides of the book are the last to be finished, the process being similar to that employed on the back. All traces of grease used on the cover must be removed, a wad of cotton wool and a little benzine being best for this purpose.

BLIND TOOLING. Where the decoration of the book is intended to be left "blind," the surface of the impression is given a polish by the working of the tool. In lines, the friction created by the working up and down of the tool is sufficient to give this. Other tools are slightly rocked to give a polish. The colour of the

impressions should be uniform. It is a good plan to tool the book while still damp from the covering, or, as an alternative, to damp it just before tooling, if this is done some time after covering. It may be found necessary to alter the degree of heat to obtain colour uniformity, and the tools may have to be worked several times. Sometimes the tools have a tendency to stick to the leather; this is prevented by rubbing the face of them on a slightly greased rag.

PASTING DOWN OPEN. The final process of finishing is to paste down the end papers. There are two methods of doing this: "pasting down open" and "pasting down shut." Pasting down open is always used for leather bindings.

The waste sheet (No. 2 sheet of the end paper) is first torn off and the joint cleaned so that no particles of glue or paste remain. Where leather or other joints have been used, the board is cut and trimmed very carefully to fit into the panel. In attaching them, the book is laid flat with one board open, this being supported by a pressing board underneath.

Where no joint has been used the end paper (No. 4) is folded very carefully over the joint and down on to the board. To trim the three edges so that the trimmings of the cover may show, marks are made with the dividers on the end papers almost as far in as the depth of the turning, and equidistant from the edge of head, tail, and fore-edge (Fig. 1, Plate 26). The paper is then turned back on a tin placed on the book, and with a very sharp knife and a steel straight edge cut to the marks, with the exception of a small portion—the depth of the joint which is left at the back of head and tail. The paper is now given a coat of the paste,

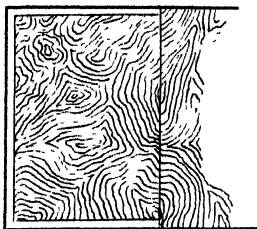
brought over into its place, and well rubbed down, special care being taken with the joint. A piece of clean paper should be placed over this and rubbed, and the bone folder worked up and down until the end paper adheres firmly. Practice is necessary to procure a good square joint. On no account must the board be closed after the end paper is pasted down. Without being unduly disturbed, the book is turned over, and the other board treated in the same way. When both end papers have been pasted in, the book is stood on its edges to dry, the boards being held open with a slotted piece of cardboard (Fig. 2, Plate 26). When perfectly dry the boards are carefully closed and the book placed under a weight for several hours.

PASTING DOWN SHUT. The papers are treated in the same manner as before, but instead of the papers being brought over on to the boards, the boards are closed on to the pasted end papers. The book should not be opened until it has been given a nip in the press, after which, if all is right, it is placed under a light weight to dry.

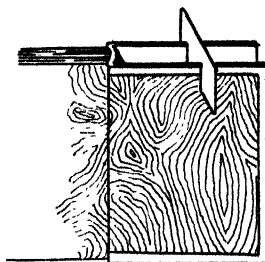
The plain back of a half-bound book is sometimes polished to render it more glossy and level. This is done with a T-shaped tool, known as a "polisher." The top of the T is cylindrical. This is heated on the stove, and afterwards rubbed clean and bright on a piece of leather. The book is held in the left hand, with the head or tail pressed against the binder, and the polisher rubbed quickly up and down the back with a slight equal pressure.

Where calf has been used in the binding the leather is often varnished. This is done partly to obtain a better gloss than the polisher will produce, and partly

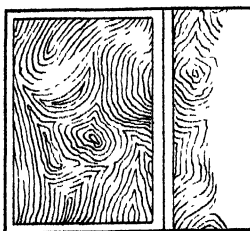
PASTING DOWN.



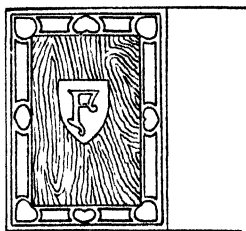
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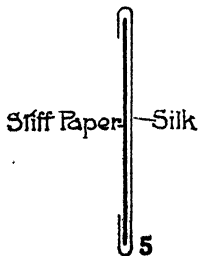
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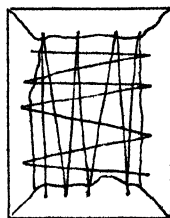
3



4



5



6

to preserve the leather, which is of a porous nature and easily soiled. Bookbinder's varnish can be procured at any of the dealers in bookbinding materials. The varnish is applied lightly and sparingly with a piece of sponge.

It cannot be too often reiterated that the essential element in bookbinding is *time*. There are occasions when the book *must* rest. If time must be utilized it is better to have two or three books in various processes of binding at the same time than to try to rush one through. Much disappointment and bad workmanship will be saved in this way. Neatness and accuracy are also essential to good binding. Time and thought should be spent on each operation, for it is better to have bound one book well than to have bound half a dozen badly.

CHAPTER XII

THE DECORATION OF THE COVER

FINE or "extra" binding may be briefly defined as "a craftsman's best work on the best materials." A book can be perfectly satisfactory when well bound in beautiful leather by reason of its good workmanship and the suitability of its colour. Another book, owing to its nature and use, may require ornamentation. There is no limit to this ornamentation providing that it is good. It is advisable for the beginner, however, to confine his or her efforts at first to work within the range of their abilities. Unless the qualities common to well-bound books are there—the guarded plates; the well-sewn sections attached firmly to boards by flexible cords; the covering material protecting and adding to the strength of the book; the capability to open *and* shut properly; the capability of the leaves to open right to the back; properly trimmed edges—decoration will not make it a satisfactorily bound book.

In lettering a book, the type used should be large enough to be legible. It is much better to break words than to use small type. The first line of lettering, extending across the side of the book, should never be a long one. The parallelism with the top edge is rarely satisfactory. A much happier method is to use two or three lines each a little wider than the preceding one. The same method applies when dealing with the back.

It has been found that the ornamentation of a book

is always more pleasing when arranged on a symmetrical basis. Unbalanced ornament has a tendency to upset the "squareness" of the whole binding.

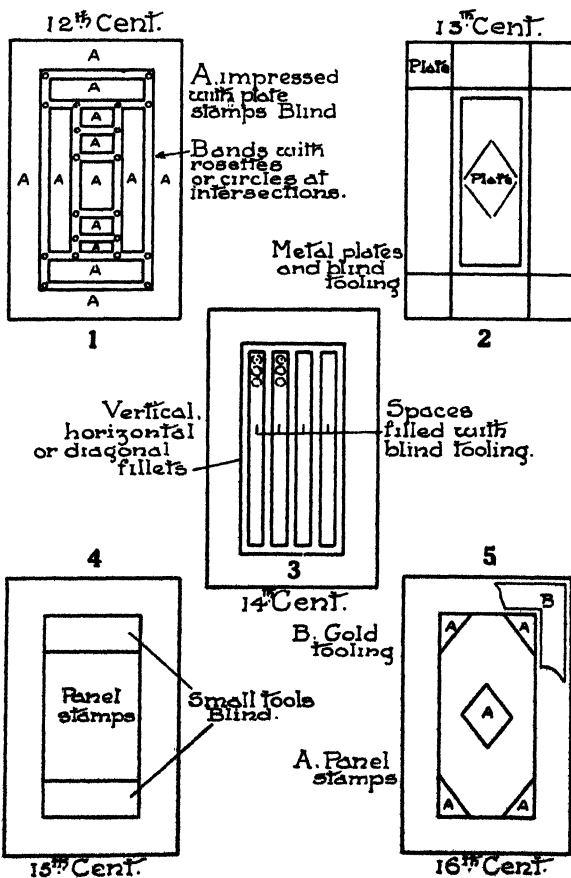
The tooling may be either "blind" or in gold. Blind tooling is the impression of the hot tool on the leather. This may be obtained by the use of the usual tools where the ornament is depressed, as in gold tooling, or by means of special die-cut tools which depress the ground while leaving the ornament in relief. This latter was the method employed when blind tooling was at its best.

In gold tooling it is necessary for the protection of the gold that the ornament should be depressed. The work in this consists of a number of units or tool impressions combined to form a connected whole. Much can be done with a line, a dot, or leaf, and a flower.

Design can be done best with the aid of an ink pad, the tool being pressed on this before applying it to paper. If the paper be thin it can be afterwards utilized as a guide in transferring the design to the cover. The type of design naturally varies with the type of book. Where possible, it should bear some relation to the contents.

There are many styles of ornamental treatment, the following being a brief outline of English bookbinding in leather. In the twelfth century the sides were divided into panels by plain bands, relieved with blind tooled rosettes and small circles, which often have a dot in the middle. The panels were impressed with plate stamps (Fig. 1, Plate 27). In the thirteenth century there was a more general use of metal plates to cover the boards (Fig. 2). The havoc of the Reformation has left scarcely an example of any description.

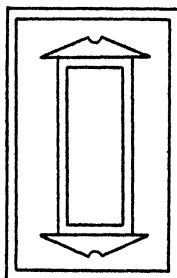
HISTORIC STYLES.



During the fourteenth century the sides were divided by vertical, horizontal, or diagonal bands of fillets, the intervening spaces being impressed with small blind tooled units (Fig. 3). The fifteenth century blind tooling was usually stained black. Panel stamps were used, and the spaces around were adorned with flowers, heavenly bodies, herbage, and small escutcheons. Small and roll tools were used (Fig. 4). The covers of the sixteenth century were often inlaid, coloured morocco being used. There was usually a stamped centre-piece in gold with corner pieces of tooled gold (Fig. 5). This was an age, too, of embroidered covers. The gold tooling of the seventeenth century was worked on inlaid leathers, the field of the design being more or less filled with small masses of ornament. Fillets and ornament were often picked out with black stain. The leading *motif* was the "cottage" design, so called because of its roof-like panel ends (Fig. 1, Plate 28). Another type in vogue in this century has its sides adorned by a vertical panel, framed by fillets, with foliated ornaments at the corners and sometimes in the centre; the whole being enclosed within a border of lace-like edging (Fig. 2). French *pointille* work was often imitated. The ground plan was usually formed of interlacing bands (Fig. 3), outlined in gold, the irregularly shaped spaces being filled with *pointille* work. Very richly tooled borders typify the eighteenth century work (Fig. 4). A style in vogue, known as the Etruscan, copied classical designs from vases, reproducing them in black on calf (Fig. 5). They were also painted on vellum. Modern bindings, owing to accessibility of material, exhibit a wide range of style, and, although the machine-stamped cover has

HISTORIC STYLES.

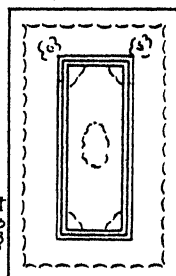
17th Cent.



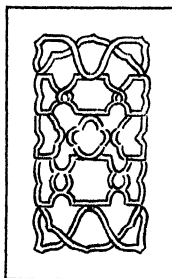
Cottage design
Gold tooled
Inlay used
Field filled
with small
masses of
ornament.

Panelled.
Foliated ornament
at corners
Lace like edging

17th Cent.

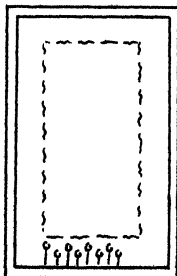


17th Cent.



Interlacing
bands. Spaces
filled with
pointille work.

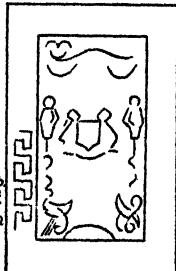
18th Cent.



Harleian
Richly tooled
broad border.

'Etruscan'
Classical designs
Black on calf.
Painted on vellum

18th Cent.



largely taken the place of the tooled, some very beautiful work is still being done.

The process of gold tooling on linen or paper is very similar to that on leather, with the exception that more pressure is required.

It may not always be thought necessary to tool books in blind or gold that are simply bound in linen or paper. In this instance very effective decoration can be obtained by the use of a pen and indian ink. The lettering should be of a legible type, such as the Roman or the broad nib writing. The ornament should be simple, and such as would give point to the lettering. This can be done straight on to the cover, or drawn on a label of a harmonious colour and pasted on. Care must be taken in placing the label in a happy position on the cover. Never place it centrally.

Silver and aluminium are sometimes used instead of gold, but a great disadvantage connected with the silver leaf is that it soon becomes tarnished on exposure to the air.

Gold tooling is sometimes worked on the turn-over of the leather, on the inside of the board. This is usually the case where a more elaborate panel than the board paper has been used. This panel may be of leather in a contrasting tone to that of the cover, the edges being pared down very thin so that the juncture of the two leathers may be easily hidden by tooling. The panel is often decorated with a design, such as the armorial bearing of the owner, or a book plate (*ex libris*) either gold tooled or painted on it. This is termed a *doublure*.

For certain classes of books silk provides a dainty panel. It can be plain or watered, and should be of a

tone to harmonize with the covering. The panel is formed by first cutting a piece of stiff paper (such as cartridge) to the size required. A piece of silk, about an inch larger both ways, is placed over the paper and the edges taken round to the back and pasted down. Care must be taken not to pucker the front face of the silk nor to strain it so tight that the paper is pulled out of shape. When dry, the panel is pasted in its position on the inside of the cover, and a sheet of clean paper placed over it. The book is then closed and placed under a weight to dry. Any decoration can be worked on the silk by means of water-colours in which a little Florentine medium has been mixed. This "fixes" the colour and helps to retain its brilliance.

Materials other than leather and linen are sometimes used for covering; such as embroidery, pierced metal, carved ivory or wood, and velvet, in conjunction with metal plates. These coverings are usually for table books.

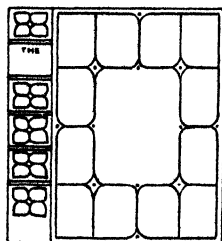
In each case the book is forwarded in the usual way, and it is only when the boards are reached that any difference occurs. These, of course, have to fit the conditions of the particular binding. Clasps are invariably kept to table books.

Gold tooling is sometimes worked on covers of velvet, suede, or silk, and it is necessary owing to their delicate character to adopt a different procedure from that used with leather. The glaire, if wet, would permanently stain them; therefore the white of eggs in this case is carefully dried, and ground to a very fine powder. As a substitute, blocking powder may be used. The result, however, is not so brilliant as when albumen is used.

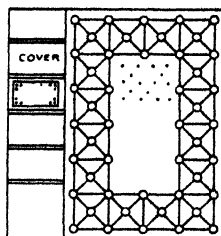
The powder in each case is sprinkled over the material, and the tooling done as before. As there is no moisture in these materials, only little portions can be done at a time. After the tooling has been completed the superfluous powder is brushed off.

The following outlines are offered as suggestions to the beginner for the layout of various types of simple covers. In Fig. 1, Plate 29, the cover has been panelled. The tools used are the straight and quarter circle, pallets, and a dot. The larger panel in the centre could be utilized for lettering. The border in Fig. 2 is double lined and filled with a simple trellis pattern formed of straight lines and circles. The space inside the border could either be left plain or filled with a pattern of dots as suggested. The unit for the back panels is formed by the use of the straight line and dot. In Fig. 3 the outer border is formed by interlacing straight lines. The inner panel has a border of lettering and is filled with a trellis comprised of straight lines, circle, and dot. The border in Fig. 4 is outlined by double lines, and is divided into compartments. The larger of these is filled with a small trellis composed of line and dot, and the smaller is filled with flowers and leaves. The inner space may be left plain. The panels on the back can be similar to the smaller compartments of the border. The narrow border and circular central panel in Fig. 5 are both filled with leaf and flower ornament. The border can either be a continuous one or broken up into small panels, which are alternately decorated and plain. The back is decorated with square panels containing the same units. Fig. 6 is an instance of the decoration of the cover indicating the contents of the book. The units used are line, leaf, and dot.

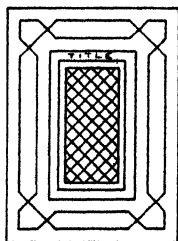
SUGGESTIONS.



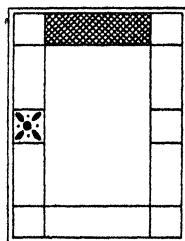
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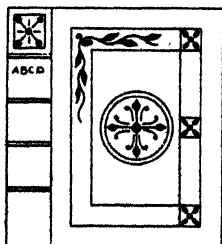
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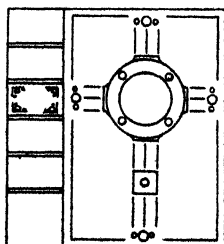
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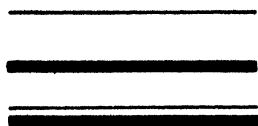


6

These units are carried on to the back where panels are formed, the corners only being decorated. These examples by no means exhaust the possibilities of cover designs, but will help the beginner to see what may be done with a few tools, and incite him to launch out on lines of his own.

Effective decoration can be produced by means of inlaid patterns of different coloured leathers. The book is first covered in the usual way, morocco being the leather chosen for this purpose. The pattern, which may be a simple plain border or a centrepiece of simple interlacing strap work, is next cut out of a coloured morocco harmoniously contrasting with the cover. This leather should be of the same thickness as the covering of the book. In the case where it is thicker it must be pared down before the ornament is cut. Its grain should also be rubbed out. The ornament is cut out with a very sharp-pointed knife, and great care must be taken not to pull the leather out of shape. The pattern is placed carefully on the cover in its correct position, and its limits are marked with a steel point. This should be done with great exactitude. The cover leather is cut along these lines, and very carefully lifted, as it may be used again for further inlay. The ornament is carefully pasted over with thick paste, laid accurately in position, and rubbed down with the bone folder, care being taken not to stretch the leather. When the paste has got a little set, clean away any that has squeezed out, place a piece of clean paper over, screw the book in the press, and leave until dry. Where an interlacing pattern has been cut from two colours, the portion of the colour which appears to go under the other is omitted so that

FINISHING TOOLS.



Line Pallets.



Roll Patterns.

Set of Rings.



Set of Gouges



Line Tools.

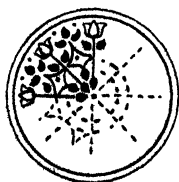


Corner piece.



Mitre piece.
Solid.

Building up pattern.



Five tools used.

only one thickness of leather occurs. In a pattern of this description one colour goes alternately over and under the other. The inlaid ornament is finished by working pallets or line tools in gold around all its edges.

Small Bibles and Prayer Books are usually bound "limp," that is to say, the cover is a flexible one. The books are forwarded in the usual way up to the stage of getting into boards, where, instead of the usual mill-board being used, a somewhat stiff paper is substituted. This paper should not be one which is liable to crack, but should be of a resilient nature. Bristol "board" answers the purpose exceedingly well, and can be obtained in a variety of thicknesses. The leather used is either a thin morocco of small grain, or Persian velvet. The latter can be obtained in a variety of colours, and is used with the "pile" side outwards. The leather extends for a little distance beyond the Bristol board, and the end paper covers the whole of it on the inside. A variety of limp cover, known as "yapp," has a projecting flap extending beyond the edge of the "board." This flap is turned over and forms a protection for the edges of the book. The corners of the flap are sometimes slit back to the board and rounded off. The edges of the flap are blind-tooled with a line fillet. Blind or gold tooling can be worked on the cover itself. This should be done before the end papers are pasted down, care being taken to place a hard substance, such as a zinc pressing plate, under the cover while working, otherwise the impressions will form unsightly ridges on the inside.

In the decoration of covers the study of good tradition should not be neglected, and should be used as

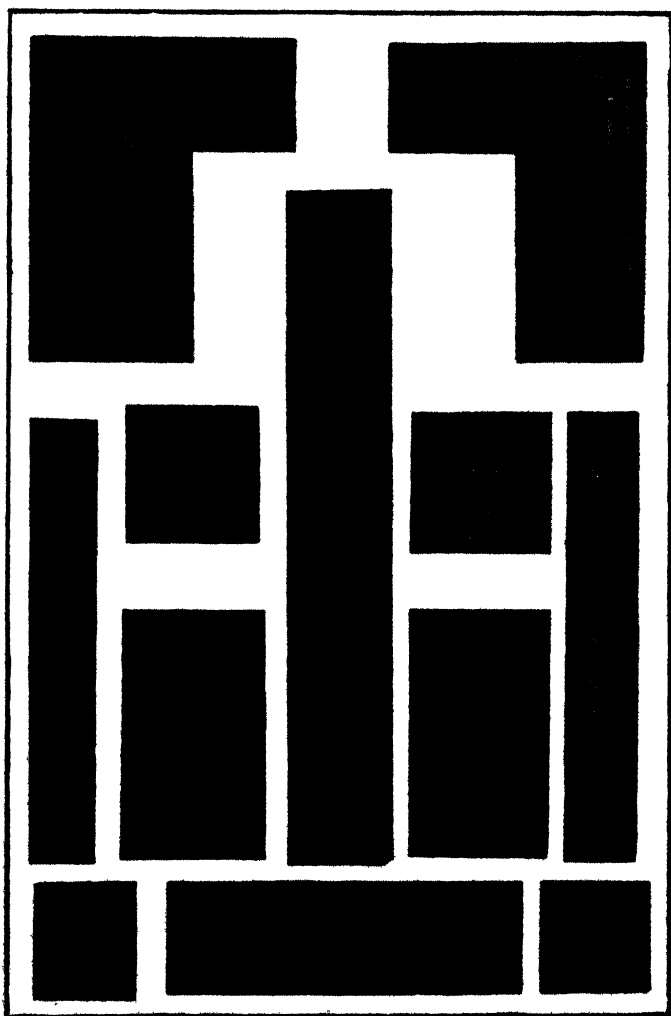


PLATE 81. BLIND AND GOLD TOOLING

an influence rather than a source of slavish copying. When designing for gold tooling it is advisable to think in terms of gold rather than of black and white. It is better to design with a light line on a dark ground than with a dark line on a light ground.

In the after care it must be remembered that the book has many enemies. One of the most formidable is damp. Brushing and cleaning, fresh air and use are among the best preservatives. All books should be periodically opened out in a warm room or in the sun. The neglect of this duty often allows another enemy, the "book worm" to work havoc in the covers and paper. The book worm is not one but several insects, belonging to the order of *Coleoptera*, or sheathed-winged beetles, which feed on the paste used in the binding, and bore holes both through the binding and paper of the book to get it. They exist in the books in both larva and insect form. There again, brushing and cleaning, fresh air and use will do a lot to prevent these mischievous insects from obtaining a foothold. For a cure, subjection to considerable heat or sprinkling the book with pure pyrethrum powder, are the best remedies.

There is a pleasure in the possession of a well-bound book, still more in a collection of such, no matter how small it may be. Bound for purposes of utility or to enshrine literature dear to the heart of the binder, books undoubtedly form one of the decorations of a well-ordered room. A series of volumes would naturally be bound in one colour, and this leads one to think that an organized scheme carried through the bindings would be of advantage. As a suggestion, all books connected with history might be bound in red, technical in black, fiction in brown, poetry in buffs, books to do with the



PLATE 32. A GOLD-TOOLED COVER

sea in blue, and so on. There should be a subtle connection between the subject and the colour of the cover. In any case, systematic colouring would undoubtedly save time in the hurried search for a volume, and also aid in the colour scheme of the small library.

No less thought or care should be spent on the less elaborate binding of more intimate books, such as those on sport and hobbies generally, which are in more constant use. Strength to withstand the wear and tear of years is the main consideration. It should be remembered that the book stands as a monument to one's own craftsmanship, and, in remembering, see that nothing is "too good."

GLOSSARY

Back. The edge where the sections are sewn together.

Backing. The operation of bending over the sections to the right or left hand from the centre of the back of the book, for the purpose of forming a groove into which the covers fit.

Blind Tooling. Impressions made in the leather with the hot tool, but which have no gold leaf applied.

Bottle-rubber. The rubber used for removing superfluous gold after gold tooling.

Burnisher. An agate tool for burnishing gold leaf.

Capping. A covering paper placed over the book to protect the finished edges.

Collated. The sections arranged in correct sequence by the assistance of the section signatures.

Cut Against. A piece of waste board inserted between book and cover to form a protection during cutting.

Doubling. The double impression made through faulty tooling.

End Papers. The coloured or white leaves found at the beginning and end of books, one of which is pasted to each cover.

Fore-edge. The front edge of the book.

Fillet. A brass wheel tool for line impressions.

Finishing. Applied to all operations which are necessary after the book has been covered.

Forwarding. The term generally applied to stitching the book together and getting it into covers.

Guards. Strips of paper or linen used to mount loose maps or illustrations in the book.

Glaire. The "white of an egg" beaten up, in water.

Gold Tooling. Where gold leaf has been applied to the blind impressions and tooled in.

Gouges. Tools marking various arcs of a circle.

Head. Top of the page.

Head Bands. The bands worked along the back of the sections at head and tail, to strengthen them.

Half binding. Where leather is used only on the back and four corners.

Head Cap. The turning over of the leather at head and tail of the back to protect the head band.

Jigger. To work the tool up and down a line to obtain a polish in blind tooling.

Joints. Strips of leather, linen or cloth, fixed in the grooves of the book to strengthen it. They are attached to the inside of the boards and the end papers.

Kerf. A cut made by a saw across the back of the sections of a book through which the threads are taken when sewing.

Kettle-stitch, or "Catch-up" Stitch. The sewing thread in leaving the extreme kerf at the head and tail of the back of the book is caught up with the thread of the section below and tied. Hence the name.

Key. Used for fixing the lay cords in lower part of the sewing frame.

Knocking-down Iron. The iron plate on which the sections are hammered to remove the old groove, etc.

Knocking-up. The sections are held between the hands and allowed to drop of their own weight upon a hard and flat surface. The head and tail are done alternately until both edges are level.

Lacing. Fixing the lay cords through the holes made in the boards.

Marking-up. The dividing and marking on the back of the sections the positions of the lay cords.

Overcast. To fix a number of separate leaves together to form a section, holes are made through them on each side of the saw kerf, and the thread passed through them, up and down and around the cords, for the whole length of the section. Used when binding music, etc.

Pallet. A tool for short lines or patterns.

Paring. The thinning of the leather by cutting.

Plate Stamps. Where a plate is used containing the whole design instead of building it up with small tools.

Polishing. Preparing the edges for the application of the gold leaf.

Rabbit Back. Term applied to a badly shaped back.

Roll Pattern. A pattern produced by a wheel on which the ornament is cut.

Rounding. Shaping the back of the book before backing.

Scraping. Cleaning up the cut edges with a steel scraper.

Set-off. Where the printed matter on one page marks, or is partly transferred to, the opposite page.

Signatures. The letters or numerals to be found at the bottom of the first page of each section.

Squares. The projection of the boards beyond the book.

Tail. The bottom of the page.

Trindles. Slotted tools inserted between the back of the book and the hanging covers, with the object of flattening the back and so preparing the fore-edge for cutting.

Turnover. The portion of the covering leather brought over to the inside of the board.

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